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FISHING

(SALMON AND TROUT)

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LONDON

DONALD IS TOO LATE

FISHING

BY

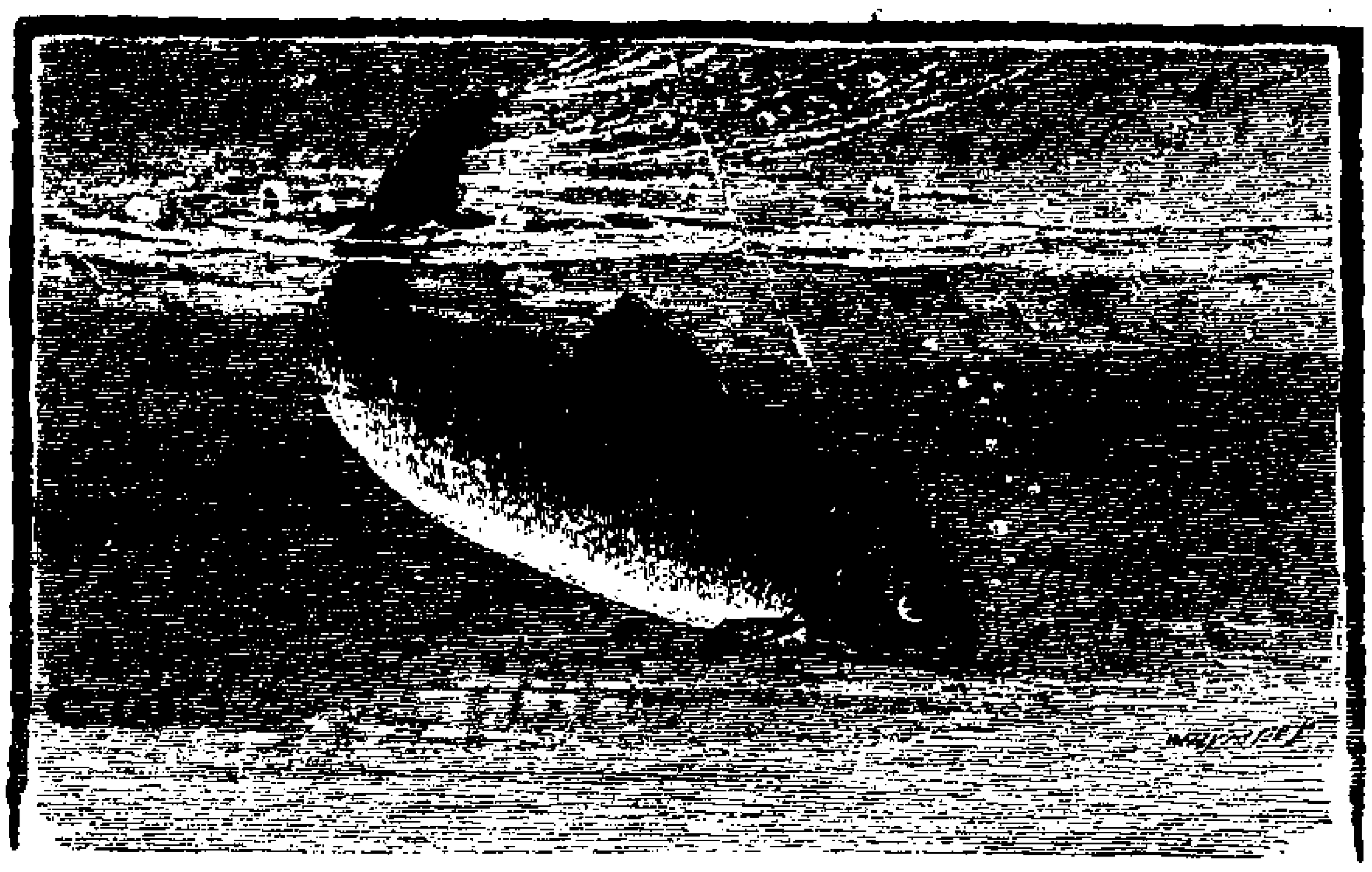
H. CHOLMONDELEY-PENNELL

LATE HER MAJESTY'S INSPECTOR OF SEA FISHERIES

Author of 'The Modern Practical Angler' 'The Sporting Fish of Great Britain'
'Modern Improvements in Fishing Tackle and Fish-hooks' etc.

WITH CONTRIBUTIONS FROM OTHER AUTHORS

SALMON AND TROUT



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Fifth Edition, revised

WITH NUMEROUS ADDITIONAL ILLUSTRATIONS
AND DIAGRAMS

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1889

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DEDICATION

TO

H.R.H. THE PRINCE OF WALES.

BADMINTON: *October* 1885

HAVING received permission to dedicate these volumes, the BADMINTON LIBRARY of SPORTS and PASTIMES, to HIS ROYAL HIGHNESS THE PRINCE OF WALES, I do so feeling that I am dedicating them to one of the best and keenest sportsmen of our time. I can say, from personal observation, that there is no man who can extricate himself from a bustling and pushing crowd of horsemen, when a fox breaks covert, more dexterously and quickly than His Royal Highness; and that when hounds run hard over a big country, no man can take a line of his own and live with them better. Also, when the wind has been blowing hard, often have I seen His Royal Highness knocking over driven grouse and partridges and high-rocketing pheasants in first-rate

workmanlike style. He is held to be a good yachtsman, and as Commodore of the Royal Yacht Squadron is looked up to by those who love that pleasant and exhilarating pastime. His encouragement of racing is well known, and his attendance at the University, Public School, and other important Matches testifies to his being, like most English gentlemen, fond of all manly sports. I consider it a great privilege to be allowed to dedicate these volumes to so eminent a sportsman as His Royal Highness the Prince of Wales, and I do so with sincere feelings of respect and esteem and loyal devotion.

BEAUFORT.

BADMINTON.

PREFACE.

A FEW LINES only are necessary to explain the object with which these volumes are put forth. There is no modern encyclopædia to which the inexperienced man, who seeks guidance in the practice of the various British Sports and Pastimes, can turn for information. Some books there are on Hunting, some on Racing, some on Lawn Tennis, some on Fishing, and so on; but one Library, or succession of volumes, which treats of the Sports and Pastimes indulged in by Englishmen—and women—is wanting. The Badminton Library is offered to supply the want. Of the imperfections which must be found in the execution of such a design we are con-

scious. Experts often differ. But this we may say, that those who are seeking for knowledge on any of the subjects dealt with will find the results of many years' experience written by men who are in every case adepts at the Sport or Pastime of which they write. It is to point the way to success to those who are ignorant of the sciences they aspire to master, and who have no friend to help or coach them, that these volumes are written.

To those who have worked hard to place simply and clearly before the reader that which he will find within, the best thanks of the Editor are due. That it has been no slight labour to supervise all that has been written he must acknowledge; but it has been a labour of love, and very much lightened by the courtesy of the Publisher, by the unflinching, indefatigable assistance of the Sub-Editor, and by the intelligent and able arrangement of each subject by the various writers, who are so thoroughly masters of the subjects of which they treat. The reward we all hope to reap is that our work may prove useful to this and future generations.

THE EDITOR.

PREFATORY NOTE.

PROBABLY few persons who visited the late International Fisheries Exhibition in South Kensington could fail to have been struck by the multiplicity, and, to the uninitiated, complexity of the engines and appliances used in the capture of fish. The observation applies even more to the 'angler'—a generic term that I have a special objection to, by the way, but let us say to the fisherman who uses a rod—than to the 'fisherman' proper, whose weapons are net and hand-line, and who 'occupies his business in great waters.'

In consequence of the growing artfulness of man or of fish, or both, angling has come to be nearly as wide a field for the specialist as doctoring. Each different branch has its own professors, practitioners, and students; and its gospel as preached by apostles, differing often widely from one another, and perhaps eventually breaking away altogether from old tradition and founding a cult of their own. Thus the late Mr. W. C. Stewart, a lawyer of Edinburgh and a 'famous fisher' of the North, may probably be called the apostle of up-stream fly-

fishing, as contrasted with the time-honoured plan of fishing 'down:' fishing, that is, with the flies below rather than above the angler's stand-point. Not that I mean to assert that Mr. Stewart was by any means the first to preach the new doctrine, still less the first to practise it, but that he was the first to 'formularise' it, to give it consistency and shape, and to bring it prominently before the angling world. . . . And even then—and it is a good illustration of the 'specialism' referred to—his book was (statedly) confined to *one* branch of *one* kind of angling for *one* species of fish: 'The Art of Trout Fishing, more particularly applied to Clear Water.' It might have been added 'and in streams and rivers north of the Tweed,' for I believe there is not a word in the book about the rivers or lakes of England, Ireland, or Wales, or how to catch trout in them. I say this in no disparagement of the author or his capital book, but only to illustrate the complexity and 'elaborateness' at which the art of angling has arrived. So far from disparaging, it is probable, on the contrary, that if all writers on fishing had the modesty to confine themselves, as Mr. Stewart did, to subjects they were really personally acquainted with, the gentle art would not be afflicted with a literature containing a greater amount of undiluted bosh—to say nothing of downright 'cribbing'—than probably any printed matter of equal bulk in existence. We want a few more 'Gilbert Whites of Selborne' amongst our angling authors. . . . Poor Stewart! he was a fine fisherman and a right good companion, and pleasant days we fly-fished side by side, with

another famous angler (and politician), alas! no more—the Johnson of Scotland, as he was well called—I mean Alex. Russel, Editor of the *Scotsman*, and author of the book of 'The Salmon.' He and Stewart were two of the finest fishermen that it has ever been my lot to know, and I loved them both well—for 'like and difference,' as Mrs. Browning puts it—though Stewart was very wroth with me afterwards and devoted a whole pamphlet to my annihilation, pugnacious 'moss-trooping Scot' as he was. . . . No reason that, however, why I should not write his epitaph in the *Field* when he died . . .

> I'd give the lands of Deloraine
> Stout Musgrave were alive again! . . .

But, some one asks 'Why do you not practise what you preach? You eulogise monographs, and you write books yourself which embrace every variety of angling and "fishey lore" from bait-breeding to salmon-catching.'

Dear critic (forgive the adjective when perhaps you are in the very act of sharpening your 'scalping-knife'), I do nothing of the sort; and though it is true I have 'graduated' in most kinds of fishing, from sticklebacks upwards, there are many subjects germane to angling, such as fish-rearing—both of *Salmonidæ* and 'coarse' fish—fish-acclimatisation, and several special departments of angling itself, where I have need to learn rather than to pretend to teach. Consequently I have thought myself fortunate to be able to secure for these

pages the very kind assistance of the eminent and scientific gentlemen who write in regard to such special subjects with equal felicitousness and authority. Thus the volumes of the Badminton Library confided to me by the Editor and publishers will not lose either in completeness or trustworthiness by my shortcomings.

Frankly, however, this is *not* the only reason why I have sought the able co-operation of Major John P. Traherne, Mr. Henry R. Francis, Mr. H. S. Hall, and Mr. Frederic M. Halford, in dealing with the theory and practice of artificial fly-fishing. One reason is that I hold opinions on these subjects which if not 'revolutionary,' may certainly be called in some sense 'radical,' and which have not as yet found general acceptance.

Whether the said opinions are right or wrong matters not. If I had seen any sufficient reason to alter them —at any rate in regard to their main outlines—I should have unhesitatingly avowed it long ago, for I look upon a man who says that he never changes his mind as a fool, or else as sacrificing truth to 'consistency;' but whatever my theories, and whatever may be their ultimate fate, I had, of course, no right or desire to air my hobbies in the pages of the Badminton Library; and I am sure that my readers will, in any case, be the gainers by the substitution of the admirable essays alluded to, written as they are by fly-fishers of long and successful experience and in every sense entitled to be regarded as masters of the craft.

To the Marquis of Exeter, Mr. William Senior,

angling Editor of the *Field*, Mr. Christopher Davies, Mr. R. B. Marston, Editor of the *Fishing Gazette*, and Mr. Thomas Andrews, I am also under the greatest obligation for the very charming and interesting contributions to which their names are attached. I only regret that circumstances should have unavoidably deprived my readers of a promised contribution on salmon fishing from the pen of His Grace the Duke of Beaufort, which would have been warmly welcomed by all fly-fishers.

For the rest, it has been my aim to make these volumes as *practical* as possible; and if the exigencies of this *rôle* have involved a certain amount of space being devoted to more or less technical matters—which, however necessary and important, are, perhaps, less attractive to the general angling public than to the enthusiastic student—I hope the other part of the programme laid down by the Editor has not been overlooked, and that the following pages will be found to be sufficiently diversified with anecdotes and incidents of sport to redeem them from being hopelessly 'dull reading.'

H. C.-P.

NOTE TO THE FIFTH EDITION.

THE very gratifying reception accorded to the earlier editions of this book, both by the press and by sportsmen, has prompted the issue of the present revised impression, in which the object primarily aimed at by editor, author, and publishers, has been to bring the textual matter, with illustrative diagrams, as closely as possible '*up to date.*'

The essays on Tackle and Fishing Gear have been practically re-written, as it is here, of course, that fresh ideas and inventions are constantly cropping up. The latest developments of the Eyed-hook system—the most important of all 'burning questions' to trout fishers—and the appliances called into existence by its increasingly general adoption, may be especially instanced; and in these and other chapters upwards of a hundred new explanatory woodcuts are introduced. At the same time illustrations of a less technical nature, especially executed for this edition, have been added, which it is hoped may be of interest.

A further contribution to the chapter on Dry-fly fishing will also be noticed from the pen of Mr. Frederic M. Halford, embodying the 'latest science' in that scientific department of angling.

A last word of cordial thanks to our critics, not only for their flattering reviews, but for the valuable hints and suggestions, which in many cases will be found embodied in the following pages.

H. CHOLMONDELEY-PENNELL.

October 1889.

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If the names of inventors and tackle-makers are frequently mentioned in these pages, it is by no means with the intention of puffing the wares or manufactures of particular firms or persons, but from the simple necessity, for the reader's convenience, of telling him how or where he can procure what he is advised to use—information without which the advice would be of little practical advantage. Many of the recent improvements in fishing-tackle, &c., are, moreover, either patented or registered, and therefore the property of individuals who are also entitled to the credit of their inventions.

FISHING.

SALMON AND TROUT.

ON HOOKS, TACKLE, AND FISHING GEAR.

'Ars est celare artem.'

THE saying goes 'A good workman never finds fault with his tools,' but if by this it be meant that he can work as well with bad tools as with good, or produce equally satisfactory results, then it says little for the sagacity of those who made the proverb. It is specially in the more artistic descriptions of work that the importance of good tools is apparent. The fly-fisher is a workman in a highly artistic school, and, if he is to do his work thoroughly well, his tools, that is, his tackle—rods, hooks, lines, &c. &c.—must be of the very best.

There are still some 'happy hunting grounds' scattered throughout the British Islands on which 'the shadow of the rod or glitter of the bait' has but seldom fallen,—small mountain lochs and moorland streams wherein fish are so guileless and simple in their habits that they will rise with delightful confidingness at the most rudimentary specimen of the artificial fly, offered to them in the least attractive manner. Such spots I have met with where it took weeks to impress upon its trout the melancholy fact that 'men were deceivers ever,' and where day after day the veriest bungler might fill his

creel, and, for that matter, his pockets and his wading boots, with the unsuspecting *fario*, which came up gaily to his flies, three or four at a time, in blissful ignorance and apparently undiminished numbers. Such spots, however, are becoming rarer year by year. Even the most sequestered waters are now sought after, and generally found out, by the indefatigable tourist or the lessees of the sporting rights; and the inhabitants of such waters, however unwilling to be taught, are receiving the benefits of a sort of 'compulsory education' that is gradually opening their eyes to several little things going on in the wicked world around, with which it is to their advantage to be acquainted.

There are, of course, and probably always will be, degrees of advancement in 'trout knowledge.' The streams of Scotland and Ireland can never, in our time at least, be fished to the same extent as those of England, and especially of our southern counties. And it is very fortunate that it should be so, for many a man whose trout-fishing experience has been attained principally amongst the Scotch and Irish lakes and rivers, and who, not unnaturally, perhaps, considers himself a highly artistic performer, would be literally 'nowhere' if suddenly transferred with the same tackle and mode of fishing to the banks of the Itchen, the Test, or the Driffield Beck. Instead of finding comparatively few trout and those under-fed, and predisposed to at least regard his lure with a friendly eye, he would see a water literally teeming with pampered and, therefore, highly fastidious, fish, whom his first appearance on the bank sent flying in a dozen different directions, and who, when his saturated nondescript did happen to pass over their noses, moved not a responsive muscle, and by their attitude conveyed the general idea of what Lord Randolph Churchill would call ineradicable superciliousness. . . .

But these are the products of 'centuries of civilisation,' and the ultimate outcome of the theory of the survival of the fittest.

In regard to salmon as well as trout the principle of the 'higher education' also holds good, although not quite in the

same degree as in the extreme cases above referred to, inasmuch as such abodes of bliss in regard to salmon have unfortunately long ceased to exist either in the British Islands or anywhere else within comfortable travelling range of Charing Cross. Every year the rent of a salmon river goes up; already it is but little less than that of a grouse moor, and what it may eventually come to, if we are not all ruined in the meantime, doth not yet appear.

Naturally, those who pay so dearly for their mile or half-mile of salmon water make up their minds to get the utmost possible out of it in the way of sport. The pools are assiduously fished whenever the water is in 'possible' condition. Often they are fished over two or three times a day, and sometimes by two or three different rods; and the consequence is that, at any rate after having been in the fresh water for some little time, and successfully resisted the first seductions thrown in his way, the salmon becomes much more shy and wary, and untemptable by fly or bait unless presented in the most enticing fashion.

To this end the refinement of every part of the fishing gear is one of the principal, indeed, the chief means Like his 'star-stoled' cousin of the chalk streams, he scrutinises with a practised glance the object which is glittering before his eyes; and, however attractive may be the lure, if the 'line of invitation,' as some one calls it, with which it is presented be coarse or clumsy, or of flattened and, therefore, non-transparent gut, it is ten to one that he will 'decline with thanks.' In short, as 'fine and far off' might be taken, in the case of the trout fisher, as the password to success, so 'neatness and strength' should be the shibboleth of the salmon fisher.

I make no apology, therefore, for dwelling in some detail upon each item of the fly-fisher's equipment, and more especially on that which constitutes the alpha and omega of the whole matter, namely, THE HOOK.

HOOKS.

Fish-hooks, as they have come down to us from antiquity, and are represented in bone or bronze in our museums and collections, appear to have been steadily improving from century to century, until in our own day the art of hook-manufacture, *per se*, may be considered to have reached its ultimate 'possibilities.'

Apart, however, from mere excellence of material and workmanship, the time is now apparently ripe for a sweeping change—so far, at least, as regards hooks used in fresh-water fishing—a change not of detail but of principle: the principle that is, *of constructing the hook with a metal eye or loop, at the end of the shank by which the line is attached (knotted on) direct to the hook itself, instead of by the old-fashioned process of gut lappings or gut loops.* Consequently hook-making may be regarded to this extent as at present in a transition state; and the angling world—the trout angler especially—is equally passing through a sort of interregnum between the old system and the new.

The realisation and completion of the eyed-hook principle was sure to come sooner or later, for an age which is 'nothing if not mechanical' could not but in the end rebel against the crude and unscientific method of procedure bequeathed to us by our ancestors, and adopted with scarcely a protest by generation after generation of succeeding anglers. The eyed-hook system was, in fact, the one great perfectionment in fly-fishing that yet remained—in spite of previous incomplete or partially successful attempts—practically unaccomplished; and recognising the magnitude of the task, as well as the importance of its achievement, if achieved, I have for some years past thrown all my energies into the attempt, with results so far eminently encouraging.

The idea itself, of some sort of plan of attachment direct to the line by means of metal eyes or loops forming part of the

hook, is by no means new. Mr. H. S. Hall, whose charming contributions to these pages will be read with interest by all dry fly-fishers, was my immediate predecessor and pioneer on the somewhat thorny, though by no means untrodden, track; and long before him, both during the present century and still earlier, a perception of the advantages to be attained by a system of attaching the hook direct to the line has been present to the minds of several writers on angling and hook manufacturers, amongst whom Messrs. Warner, of Redditch, are entitled to most honourable mention. But what I mean by saying that the perfecting of the idea yet remained to be accomplished is, that, however ingenious or admirable in themselves, these attempts and essays have failed in the one all-important respect of actually solving the problem; of solving it, that is, by producing such a system of hook-eyes and attachments as would obviate the various inherent difficulties and objections, and bring the invention into general practical use amongst anglers.

Success—as I think it is now being perceived—depended, in fact, quite as much on the perfect simplicity and strength of the knot by which the attachment is to be made as on the metal eye or loop itself.

This 'loop' might, theoretically, be either turned upwards or downwards, or 'needle-eyed'—that is, drilled perpendicularly through the end of the hook-shank like the eye of a needle; and in the first issue of these volumes each system was fully discussed, with the arguments *pro* and *con*. At present, however, it would appear—so far, at least, as the tackle makers may be supposed to feel the pulse of the angling and fly-fishing world—that the arguments adduced in the earlier issues of this book, or other causes, have so far influenced public opinion in the matter that—firstly—eyed hooks are rapidly coming into more general use, primarily amongst trout-fishers; and—secondly—that only my own patterns of hooks with the eyes *turned down* enjoy any considerable or increasing popularity. I shall therefore, in the present revised edition, omit as far as

may be reference to argumentative or controversial matters, now possessing little beyond an 'academical' interest, and limit the scope of the following pages to explaining my own Eyed-hook system in its most recent development, as applicable both to salmon and trout flies. Its applicability to all kinds of float-fishing, &c., and to sea-fishing is dealt with in Volume II.

To begin with Salmon Flies.

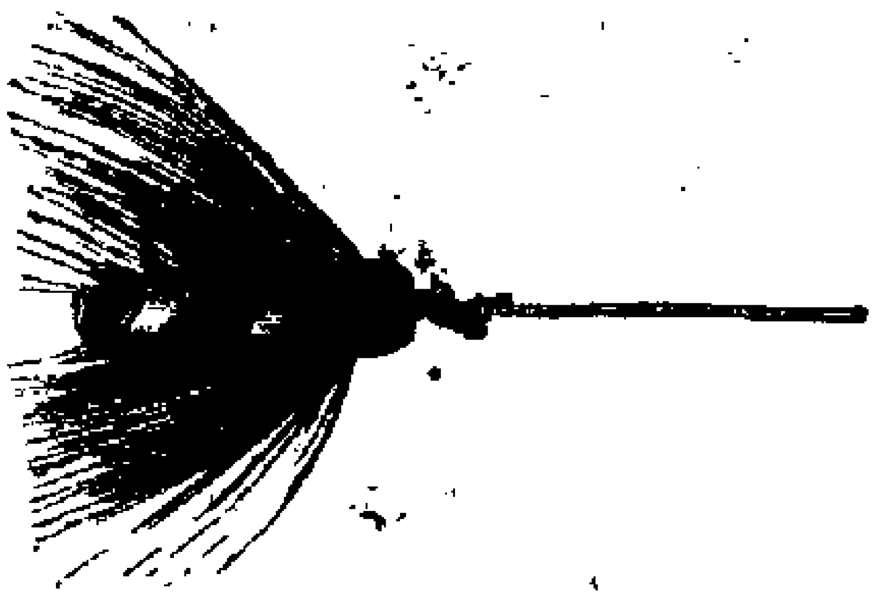
Although in the case of the salmon fly—when dressed, that is, in the more ordinary way with a gut loop—the paramount and self-evident advantages for the eyed-hook principle that may be claimed in the case of the trout fly do not present themselves, yet there are several points, and those not unimportant ones, in which the metal-eyed salmon hook offers a distinct advance over 'lapped-on' hooks.

Take, for instance, probably the most obvious point, the question of durability. The life of the old-fashioned salmon fly, whether tied on a strand of gut or on a gut loop, is measured by that of the waxed lapping that binds the gut or gut loop to the hook-shank—the period, in other words, during which the wax retains its adhesiveness; and this, it is well known, it does not do for more than a limited—and, moreover, an uncertainly limited—time. The hook and the rest of the fly, on the contrary, when preserved from moth and rust, are for practical purposes indestructible, and if either should happen to give out the fact is easily discovered, and does not in its discovery entail losing the best fish, perhaps, of the season. The pleasure of possessing and keeping up a good stock of salmon flies is sadly alloyed by the reflection that after a few years prudence would counsel their being consigned to the nearest dust-hole.

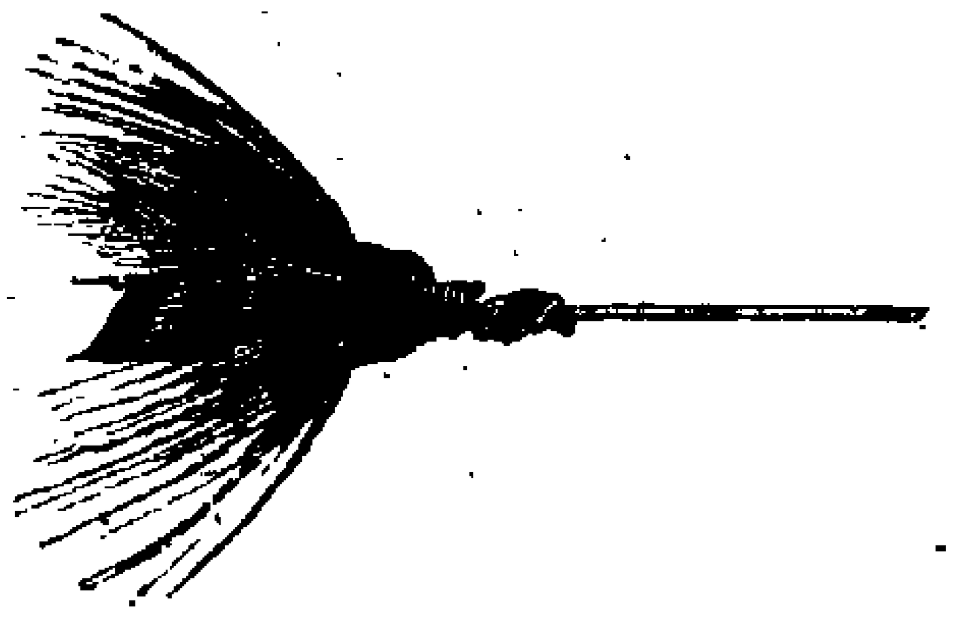
Again, as regards the comparative neatness of the two systems, the verdict would probably be in favour of the metal eye, although the difference is but trifling.

There are no *dis*-advantages of any kind that I am aware of as a set-off to the foregoing advantages, and therefore, weighing impartially the two systems—gut loops *v.* metal

loops—it would seem that the balance inclines in favour of the latter. As observed, however, the fact that loops of some sort are in practice already very general in salmon flies, makes



KNOT ON METAL LOOP.

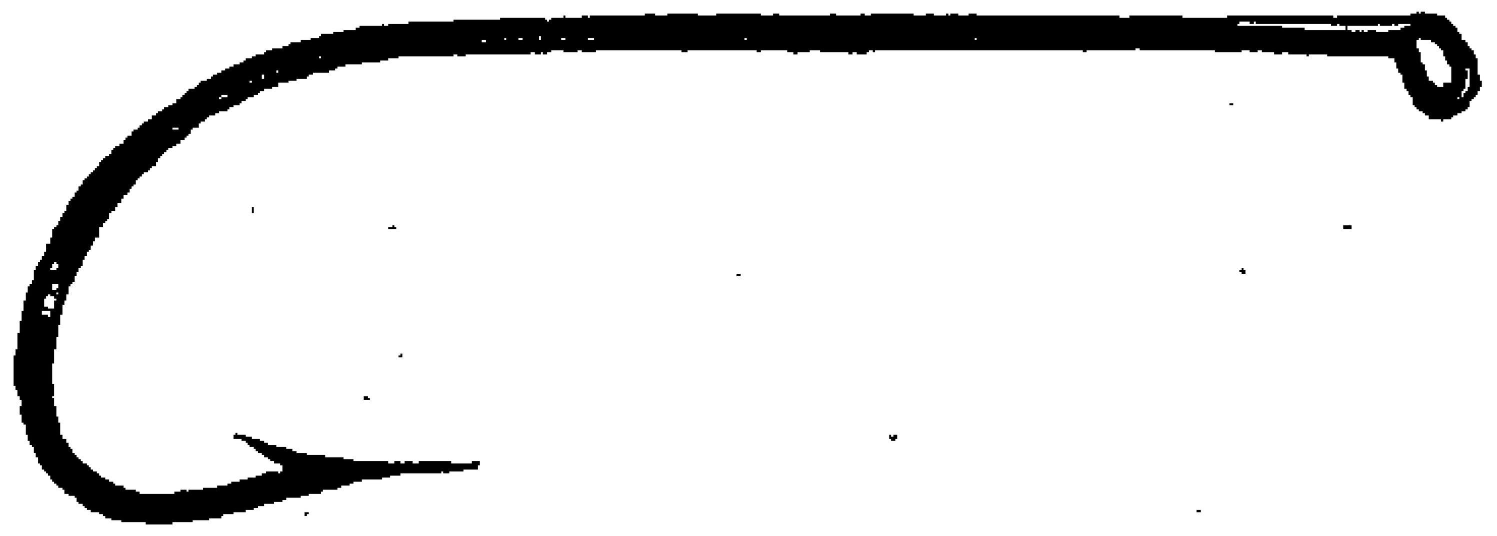


KNOT ON TWISTED-GUT LOOP.

the question of less immediately critical importance to the salmon-fisher than to the trout-fisher, in whose case the change from lapped-on flies to flies attached by an eyed hook is nothing less than a revolution. . . . But to finish first with the subject of salmon hooks.

In the original design of the turn-down eyed salmon hook, it was alleged—no doubt with some show of reason—that, from imperfections almost necessarily incident to manufacture on a large scale, the pointed ends of the taper forming the loop were occasionally left so sharp, or incompletely 'closed,' as to fray the gut of the attaching knot at this point; and in my newest patterns it will be seen this is effectually provided against

by the tapered end of the wire, forming the eye or loop, being *re-turned* up the shank for some not inconsiderable distance. This gives a perfectly smooth and even surface of metal eye

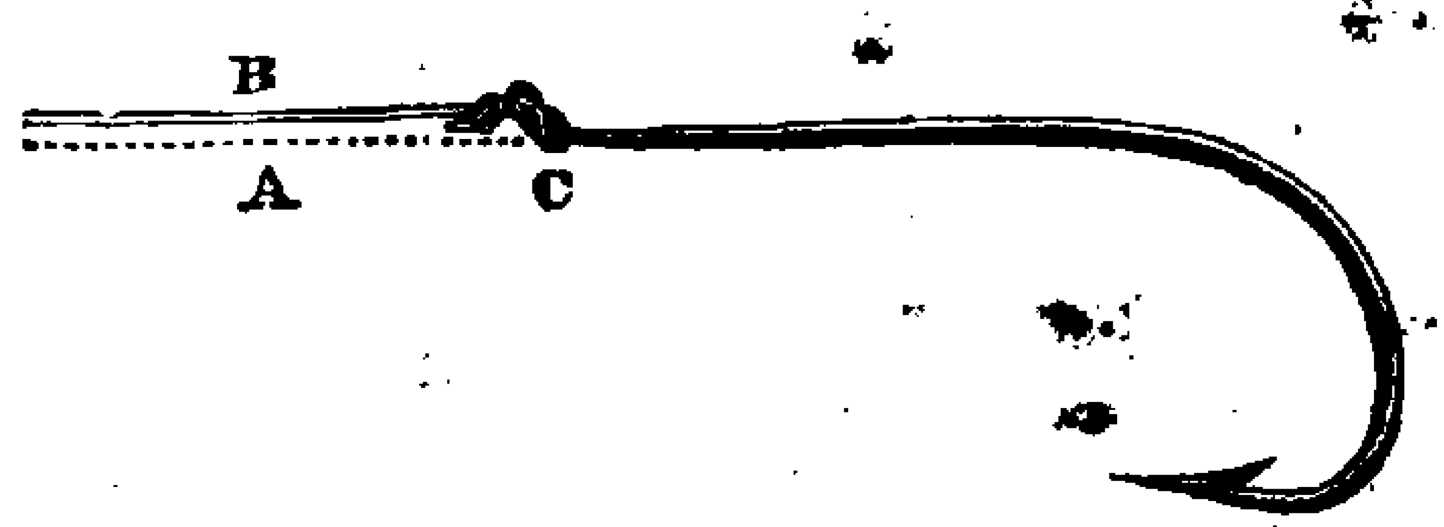


SALMON HOOK (OLD PATTERN) WITH 'RE-TURNED' EYE.

for the gut to work against, and its shape offers at the same time special conveniences to the fly-dresser.

The point of importance to be recollected in dressing flies on these hooks, whether for salmon or trout, is that the 'neck,' between the head of the fly and the loop, should be left clear to receive the gut (*vide* preceding diagram, p. 7, left-hand fig.).

It has been observed that my old turn-down eyed patterns of hooks, both salmon and trout, appear to be steadily pushing all other forms of eyes and loops out of the field—and this notwithstanding two very decided blemishes. One defect, so far as salmon hooks are concerned, has just been described, with its remedy; the other was inherent in the principle not only of my own turn-down eyed patterns, but in a still greater degree in the older models of hooks with eyes turned up. The defect is—or rather was—*that the line did not, and could not, occupy a plane absolutely level with that of the hook-shank.*



DEFECTIVE TURN-UP EYED SALMON HOOK
WITH 'OVER DRAFT.'

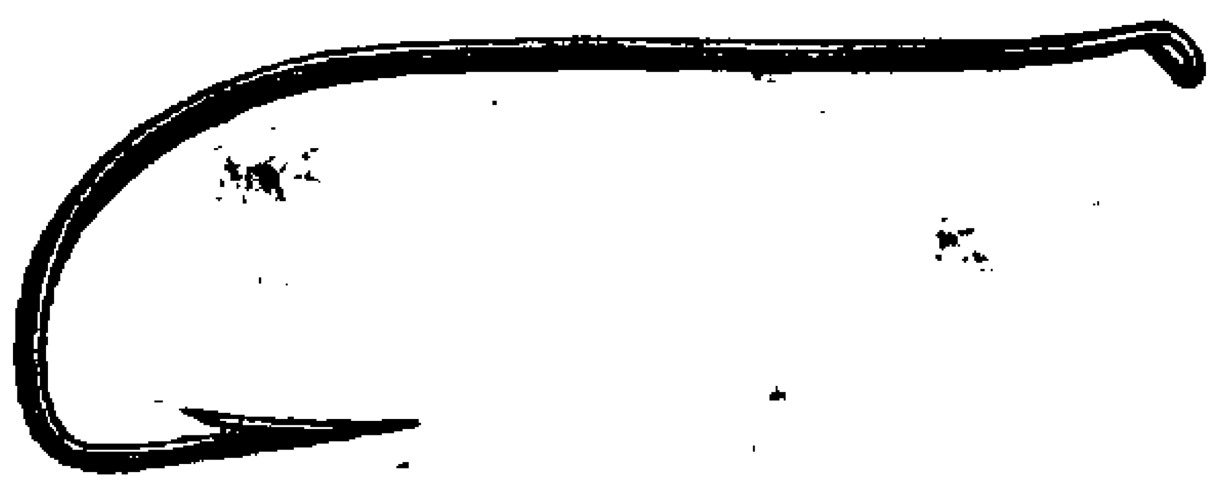
C, Loop or eye; A, correct draft-line; B, actual draft-line.

In the turn-down eyed hook the inaccuracy was of course reversed. The deflection was considerably less than that above illustrated; still it was a decided defect—one of its results being (in the case of my own hooks) to unduly narrow the 'gape' of the hook, and, in the turn up eyed hooks, to unduly widen it. That this must inevitably be the case, a glance at the last diagram will show.

To overcome the difficulty, I tried many experiments—indeed, I began experimenting on my own hooks almost as

soon as the pages containing their original patterns were published—1885, I think. It was really, however, a new *principle*, rather than a new pattern, that was wanted; and I only discovered what I was in search of after a wearisome succession of 'modified successes,' and an accumulation of abortive 'notions,' taking form in all unimaginable shapes of twisted and contorted steel. However, at last I did discover it, and having committed the folly of 'publishing' my old turn-down eyed hook before getting it protected, I took the new one straight away to the Patent Office, and subsequently put the model into the hands of Messrs. Wm. Bartleet & Sons, of Abbey Mills, Redditch, who soon turned out a sufficient quantity to try practical conclusions with, the results of practice fully bearing out the deductions of theory.

The principle embodied in the new hooks is, in effect, the bending of the shank-end first up and then down, into something like two sides, so to speak, of a triangle, of which one side is formed by the hook-eye, and the other by the turned-up



NEW PATENT SALMON HOOK WITH UP-TURN SHANK AND TURN-DOWN EYE.

end of the extremity of the hook-shank (see cut). The effect of this is *to bring the line exactly into a plane with the hook-shank, whilst at the same time retaining all the advantages, in neatness and facility of attachment, &c., of the original turn-down eye, together with the full natural gape of the hook bend—and no more.*

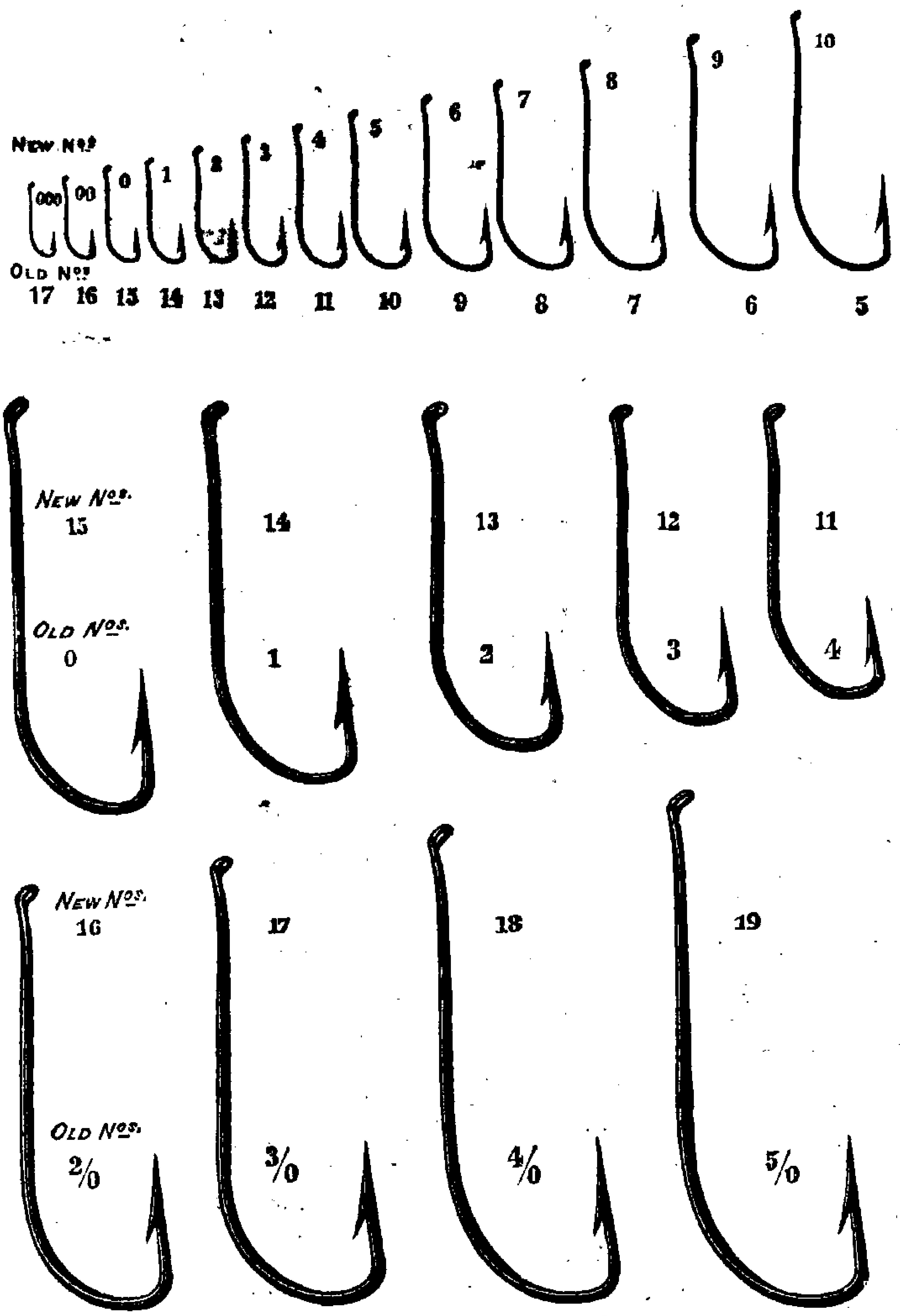
The new patent I have only hitherto had applied to my own special bends of hooks—the 'Pennell-Limerick' and 'Pennell-Sneck' bends (see illustrations); but it is, of course,

equally applicable to all the other hook-bends of commerce, several of which are shown in the engraving a page or two on. Some or all of these will, I hope, be obtainable at the tackle shops before this volume is issued. To prevent fraud and to ensure the *bonâ fides* of the hooks sold as mine—many spurious and defective imitations of my earlier hook having, I am sorry to say, been made by unauthorised firms—I have also obtained a 'trade-mark,' and arranged that every packet of the hooks shall bear such trade-mark with my signature, and so affixed to each packet that it cannot be opened without the label being torn or destroyed.

Of the foregoing hooks all the larger sizes, intended primarily for salmon and grilse flies, from No. 8 upwards, 'New' scale (No. 7 upwards, 'Old' scale), are made with the wire of the loop or eye 're turned' up the shank, as already explained. Sizes 8 to 10 'new' scale (7 to 5 'old' scale), inclusive, are made both with and without the re-turned eyes, so as to suit either light or heavy fishing; and from No. 8 'new' scale (No. 7 'old' scale), inclusive, and upwards, the hooks are made double as well as single.

Eventually, no doubt, all the smaller sizes will be manufactured both single and double, as the increase in the use of small double hooks for many descriptions of flies, including ordinary trout flies, where no one would formerly have thought of using them, is another comparatively recent advance in the science of fish-hooks. I have no doubt whatever that, especially for the smaller sizes of salmon hooks, the double pattern has considerable advantages, and I hear that on some rivers, the Tweed, for example, they are completely driving the single hooks off the water. It is obvious, indeed, that they greatly increase the chance both of hooking and of holding a fish; and against the small additional weight, which may be a slight inconvenience, perhaps, in casting, is to be set the fact that the extra weight has the effect of making the fly swim somewhat deeper, which in salmon-fishing is a generally desirable result.

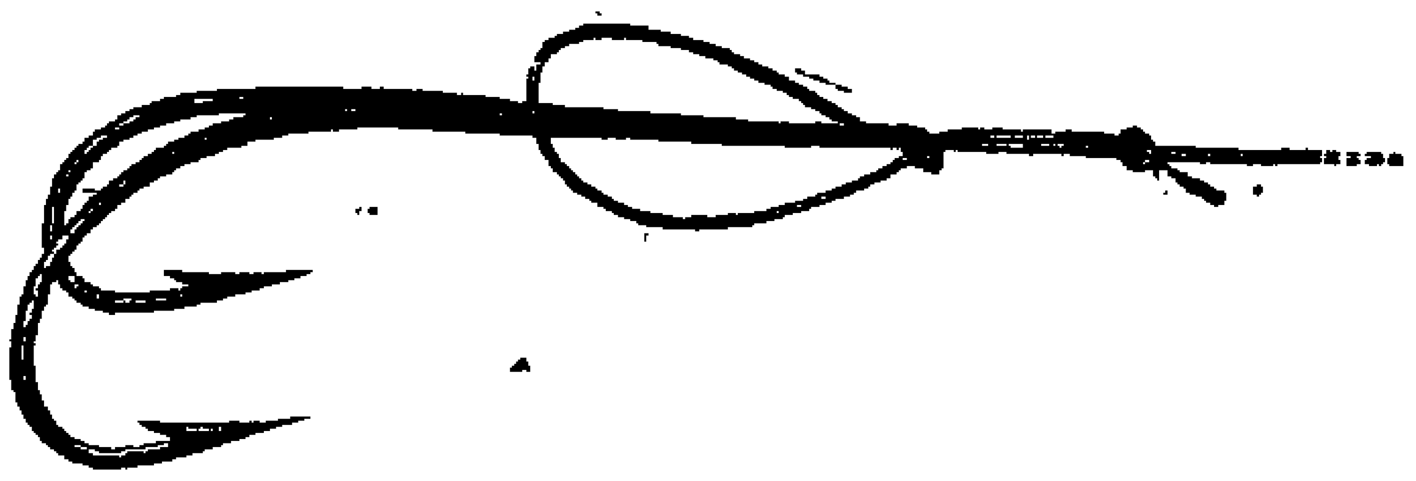
'PENNELL-LIMERICK' HOOKS, NEW PATTERN.



WITH TURN-DOWN EYES, AND UP-TURN SHANKS.
PATENT UNITED KINGDOM AND U.S.A.

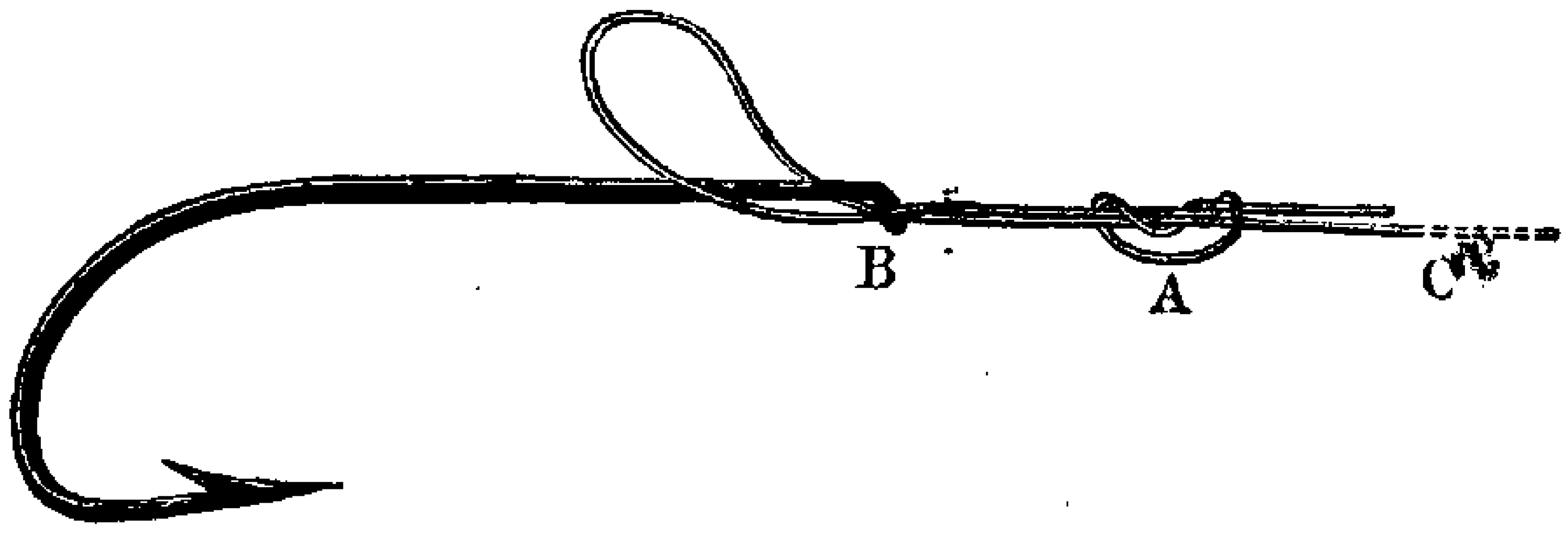
(Upper figures 'New' Scale, lower figures 'Old' or 'Redditch' Scale.)

The only correct mode of attaching salmon and grilse hooks with re-turned eyes, as well as the double hooks—in both of which the eye is made extra large for the purpose—is by the 'in-and-out' fastening, secured with a slip knot, double or single, here referred to as the 'slip-knot' attachment.



SINGLE SLIP-KNOT ATTACHMENT.

Although a 'single slip' knot is all that will usually be found actually necessary, especially with the smaller-sized grilse hooks, yet even in this case—and still more in that of the

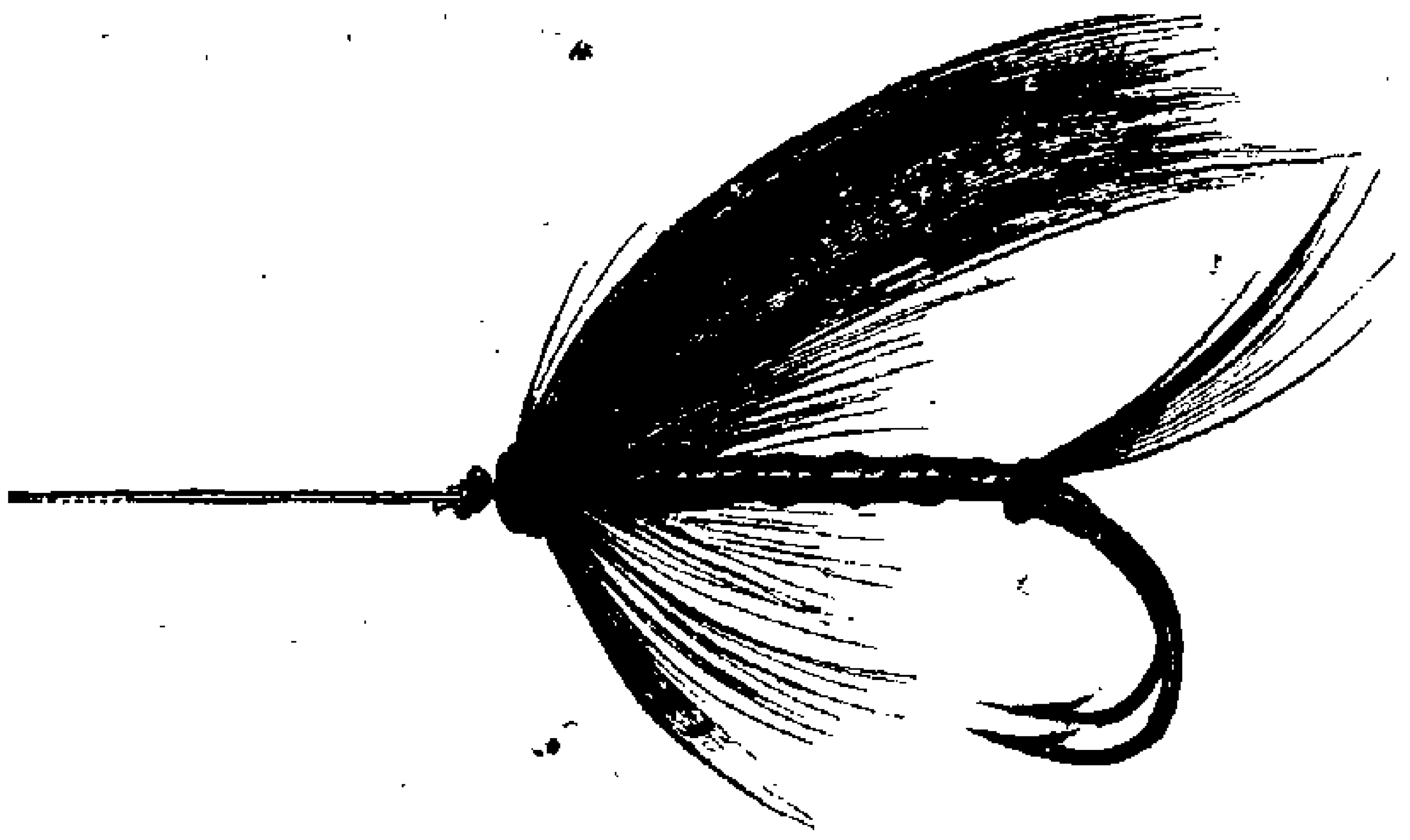


DOUBLE SLIP-KNOT ATTACHMENT.
(Shown, unfinished, on old model of turn-down eyed hook, bare.)

larger-sized salmon hooks—a 'double,' instead of a 'single,' slip knot makes 'assurance doubly sure.' Indeed, I myself almost invariably use the double slip knot, *and recommend its adoption for all hooks of a size too large, or with eyes too large for the 'Jam Knot' attachment* (hereinafter described)—and for *all hooks with 're-turned' eyes.* The 'double slip' (figured in the last cut) makes, when artistically tied on a large hook, a fastening quite as neat as, if not, indeed, actually neater than, the single slip; and is in many ways preferable.

The following verbal instructions may perhaps assist the tyro, in attaching his casting line to a turn-down eyed salmon hook for the first time.

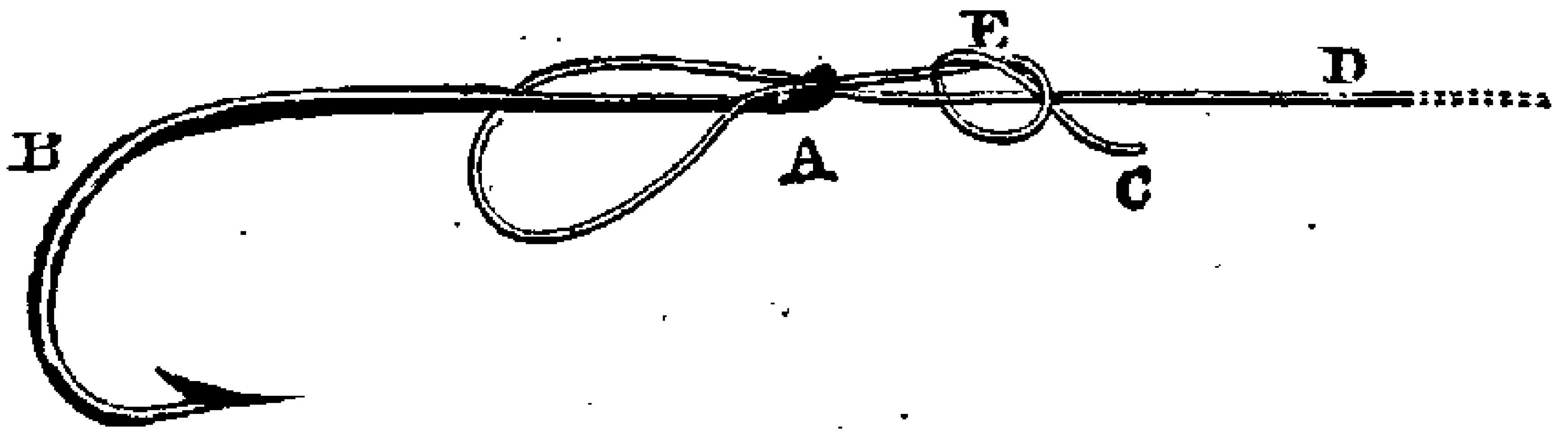
Take the hook by the bend between the finger and thumb of the left hand, with the eye turned downwards (in the position shown in the diagrams; then—*the gut being first thoroughly well soaked*—push the end, with a couple of inches, down through the eye, B, towards the point of the hook; then pass it round *over the shank of the hook*, and again, from the opposite side, downwards through the eye in a direction away from the hook-point. [The gut end and the central link will now be lying parallel.] Make the double- (or single-) slip knot, A, round the central link, C, and pull the said knot itself perfectly tight; then draw the loop back until



TURN-DOWN EYED SALMON FLY ATTACHED BY SLIP KNOT.

the knot, A, presses tightly into and against the metal eye of the hook, B, where hold it firmly with the fore-finger and thumb-nail of the left hand, whilst with the right hand—and 'humouring' the gut in the process, so as to clear the hackles, &c.—the central link is drawn tight, thus taking in the 'slack' of the knot. When finished, cut the superfluous gut end off nearly close.[1]

[1] If turn-*up* eyes should be used, the mode of attachment by a single slip knot is shown, unfinished, in the diagram. It is the same knot as that described for the turn-down eyed salmon hook, merely passing the loop under instead of over the shank.

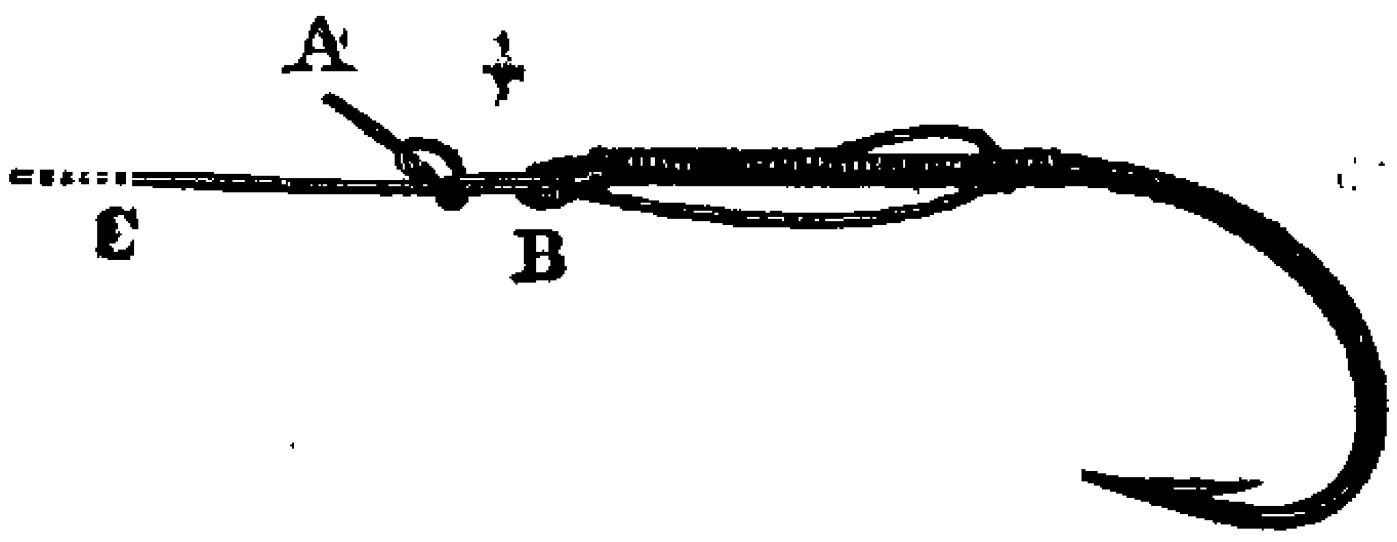


SINGLE SLIP KNOT FOR TURNED-UP EYE HALF FINISHED.

A, Eye; B, hook-bend; C, end of gut line; D, main line; E, single slip knot.

To tie a double slip knot: first make a single slip knot, *a*, and, before drawing close, pass the gut end, *b*, a *second time* round the central link, *c*, and then again through the loop, *a*—when the knot will be like 'A' in the diagram of double slip knot. To complete it, pull the end of the gut, *b*—gradually, and very tightly—*straight away*: in a line, that is, with the central link, *c*.

The slip knot is also the best for attaching the casting line to flies with gut loops, and should be tied in the same manner as that described for a turn-down eyed hook.



SINGLE SLIP KNOT ATTACHMENT TO GUT LOOP.

The same knot, for both gut or metal loops, may also be produced in another manner—when the loop is large enough—viz., by tying at the end of the casting line (separate from the hook) a 'noose,' with a slip knot (drawn tight), and afterwards passing from above, through the loop or eye, the 'apex' of the noose thus formed. The noose is then opened out and passed upwards over the whole fly, 'lasso-wise'; the knot is drawn to its place in the loop as already described, and the 'slack' taken in.

There is a mode of attaching casting lines to gut-looped salmon flies very commonly employed on account of its facility of manipulation, and the saving of trouble and time in changing flies. In consists in tying a knot at the end of the gut, and then passing the knotted end first through the loop from below, and, after giving it one turn round under the loop, finally passing the knotted end under the central link, and drawing the latter tight. It is in fact a 'jam knot' *plus* the knot at the end of the line. Excellently well as this knot answers for hooks of the smaller sizes with eyes turned down, as hereafter described, it does not and never can make a

thoroughly 'ship-shape' knot for a salmon fly, inasmuch as the latter when thus attached invariably hangs—and therefore, of course swims—out of the horizontal: in other words, head downwards. If, on the contrary, the gut is passed through the loop from above and the turn taken over the loop, an opposite

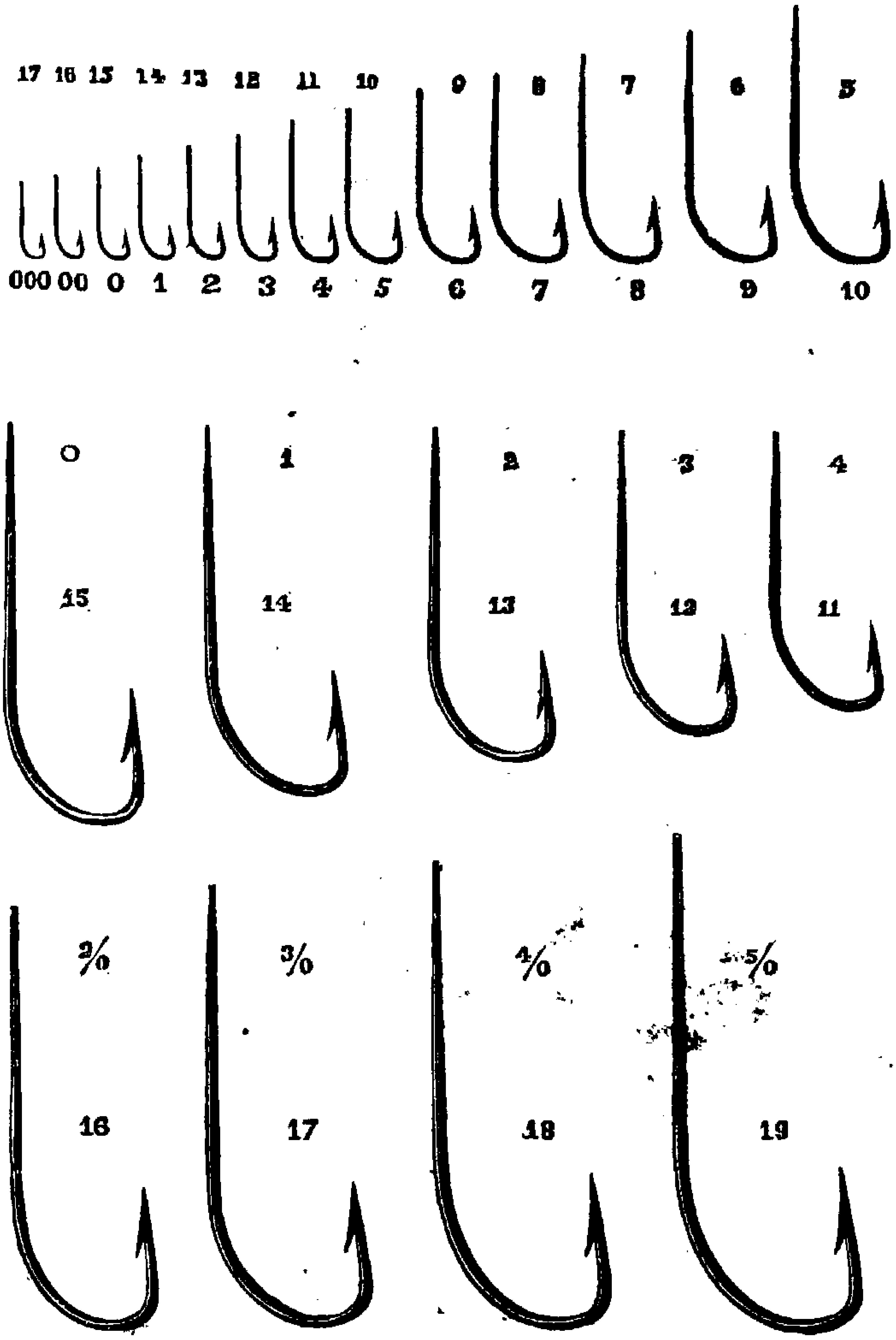
GUT-LOOPED FLY ATTACHED BY DOUBLE SLIP KNOT.
(Facsimile of Knot.)

but equally inelegant effect is produced; the fly 'cocks up,' and might swim in almost any position conceivable, except the horizontal. There are several variations of this fastening; but I cannot say that I ever met with one entirely satisfactory for salmon flies. The best knot for gut-looped flies, or for plain hooks with gut loops, twisted or single, is, 'far and away,' that already recommended,—the slip knot.

The 'Pennell-Limerick bend hooks,' before figured, p. 11, are also made *plain* (as shown over leaf) for the convenience of those who may still prefer the old 'lapping-on' system.

The bend of all these hooks, which is a variation of existing recognised bends, is one that I think will commend itself to the practised eye without much argument. The bend has been designed to combine in a mechanical form the three great requisites of penetration, holding power, and 'flotation.' The last-named, which sounds rather Irish, is a question of the general *contour* of the shank. It will be seen in the diagrams

'PENNELL-LIMERICK' BEND, TAPERED SHANKS.



(Upper figures 'Redditch' Scale, lower figures 'New' Scale.)

that the hook shank itself—or rather that part of it on which the fly is tied—is very nearly straight, whilst in the Limerick bend the shank is commonly slightly more curved, or, as it is termed, hog-backed, which when exaggerated, as it frequently is in the so-called Limerick hooks, supplied by the fly-tyers, has the effect of preventing the fly swimming or floating

DEFECTIVE HOG-BACKED-SHANKED HOOK.

perfectly straight,—and, indeed, when the stream is strong, an excessive 'hog-backedness' will not unfrequently cause it actually to spin.

An exaggerated example of this is shown in the cut.

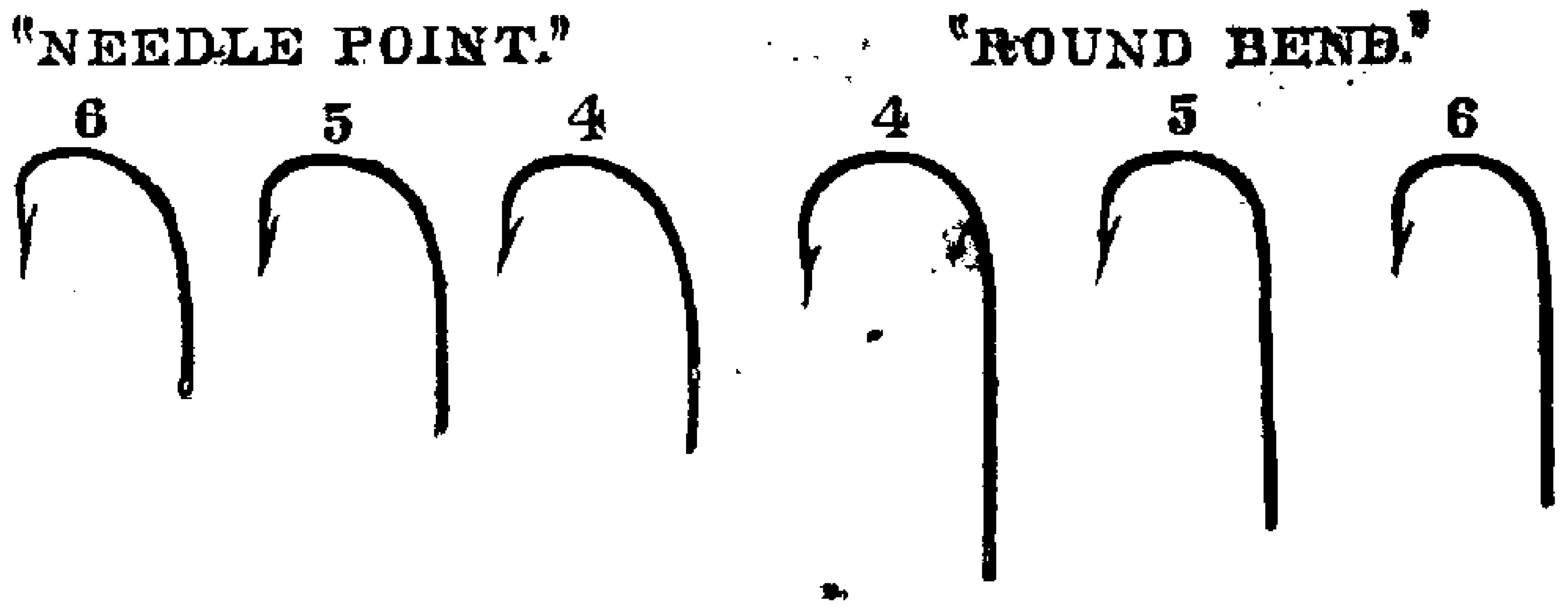
The penetrating power in my bend is obtained by the angle at which the point and short side of the hook stand in regard to the hook shank, towards which, it will be observed, they are *very slightly* inclined, so that when the point pricks the mouth of a fish the probabilities of its penetrating are greatly increased. Into the general question of fish-hooks, however, their vices and virtues, and the mechanical principles on which they should be (but unfortunately seldom are!) constructed, as also as to what are the 'points' of a perfect hook, I have already entered fully in the pages of the 'Modern Practical Angler'[1]; and have since had the pleasure of finding the views there set forth very generally endorsed by the thinking portion of the angling public, and notably, during the last year or two, by American writers on the subject. The general argument is perhaps somewhat beyond the scope of this essay, and I will merely observe here that, 'flotation' apart, the three cardinal principles to be borne in mind as governing the 'killing' (*i.e.*, striking, penetrating, and holding power) of a fish-hook, are (1) the length of the shank compared with the width of

[1] *The Modern Practical Angler.* 5th Edition. Routledge.

the bend; (2) the angle at which the short, or point-side, of the hook stands in relation to the shank; and (3) the shape of the point and barb. In proportion as the point is long, *fine*, and conically tapered (which necessarily includes the barb not being too 'rank'), so, *cæteris paribus*, will be its tendency to bury itself in whatever it comes in contact with; as the direction of this barbed point, and the angle of the short or point-side (or angle of impact), coincides with the direction of the applied force (i.e. in this case the 'pull' of the line) so will be its hooking and penetrating inclination; and as the shank is long in proportion to the width of the bend, so will be the general power it gives the hook in striking a fish and in holding him when struck.

It may be added that, as the greatest strain is always borne by the top angle of the bend, such angle should be formed, not 'square,' but in the strongest shape known to mechanics, viz., a curve (or the segment of a circle) sharper or more gradual according to the other conditions desiderated.

Although it is very difficult to give an accurate rendering of fish-hooks by means of wood-engraving, a glance at the diagrams, pp. 11 and 16, will, I hope, convince the 'educated' eye that an attempt, at least, has been made to combine these various essentials—giving to each its due weight and proportion—so as to bring out a mechanically reliable result.



DEFECTIVE HOOK-BENDS.

The diagrams above are good illustrations of defective hooks. They embrace nearly every vice which, mechanically

speaking, can be imported into a hook. And yet they are taken, *facsimile*, from a hook-maker's catalogue (I forbear to give the name), as illustrations, it is to be presumed, of what in his opinion hooks ought to be! If one of these abortions, say No. 4 or 5 'needle point,' so called, were attached to gut and the point pulled in the ordinary way against a piece of cork—which represents fairly well the inside of a fish's mouth—I doubt very much if it could by any possibility be made to penetrate; the hook-point would, in fact, strike the fish's mouth vertically instead of horizontally.

If it should appear that I am attaching undue importance to minute details, let it be borne in mind that 'the whole art and paraphernalia of angling have for their objects, first, to hook fish, and, secondly, to keep them hooked.' The difference in the penetrating powers alone of different bends of hooks is something enormous; between the extremes of goodness and badness (I am not speaking now of 'monstrosities') it amounts to certainly not *less* than a hundred per cent.

TROUT HOOKS.

Eyed Hooks for trout flies, and the general idea of attaching them to the end of the casting line direct, are not, as already pointed out, in any correct sense of the term novelties, eyed hooks having been alluded to as early as Hawker's edition of 'Walton's Angler,' *temp.* 1760. No great attention, however, appears to have been paid to the subject of Eyed Trout-hooks until comparatively recent times, when the question—confined, at the particular period to which I am referring, to turn-up eyes—was ventilated at considerable length in the columns of the *Field* and the *Fishing Gazette* by Mr. Hall. This was followed in the latter journal by a lively controversy on 'needle-eyed' hooks, initiated by myself; and finally I invented, and published, the turn-down eyed hook, of which so much has since been written, for and against, by partisans of the old and the new schools.

I have already explained why I feel released from the necessity of reprinting here the arguments *pro* and *con* these various systems—viz., that to judge by the success of my own turn-down eyed hooks, and the opinions of fly-fishers and tackle makers, so far as I am able to gather them, that system is in rapid course of superseding all others. If this is the case with the original imperfect patterns, how much more likely is it to be so now, when, by the introduction of the up-turn shank, the hook has been, so to speak, perfected. . . .

To return, therefore, to my text.

The considerations already adduced in regard to the proper form of a large salmon hook hold good, *cæteris paribus*, and with increased cogency, in the case of a small trout hook, where of course the mechanical difficulties, first of hooking, and secondly of keeping hooked, are enormously increased. They are increased, in fact, exactly in the ratio of the size of the hook as compared with the size of the fish's mouth . . . a number 000 is clearly much smaller in proportion to the mouth of a large trout than a number 17 or 18 is to the mouth of a well-grown salmon. The exact calculation I leave to the curious in figures. My system of eyed hooks is, however, applicable to all the ordinary hook-bends without exception, so that those who prefer one or the other of them to mine can reject the pattern and yet adopt the principle.

The fly-fisher who is sufficiently interested in the subject of hooks to read this chapter at all, will, I may assume, have read the preceding pages which deal, under the head of salmon-hooks, with what I may call the 'natural history' of my system. He will have seen the diagrams of the original bend of these down-eyed hooks, noticed the points wherein they were explained to be deficient, and grasped the change of principle introduced in the new patent up-turn shank by which they were perfected, including the insuring of the full 'gape' of the hook, and no more. I need not, therefore, go again over the same ground. It may, nevertheless, be well to illustrate, on

a smaller scale more appropriate to trout-flies, the very important question of over- and under-draft in these hooks.

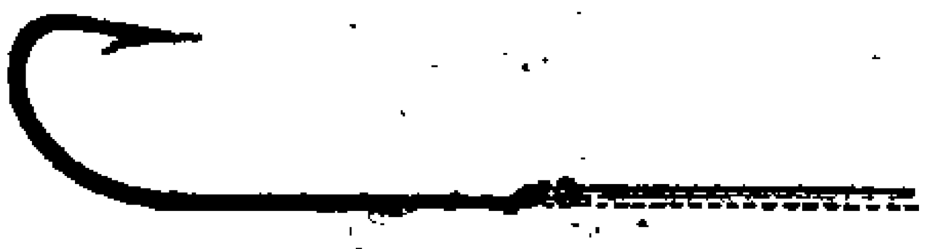


FIG. 1.

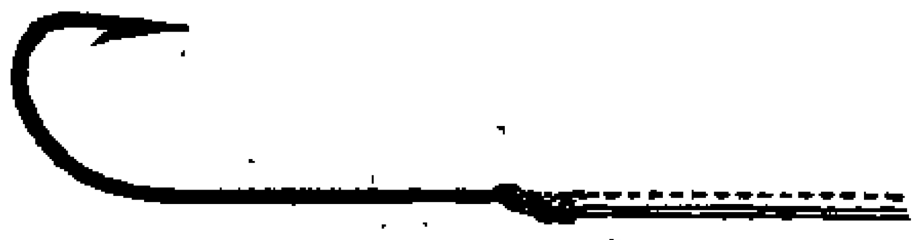


FIG. 2.

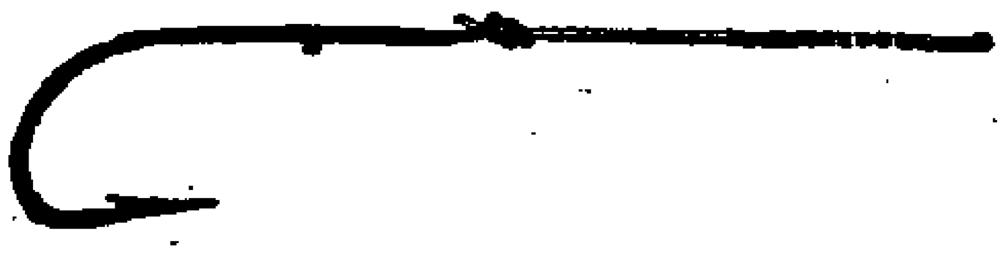


FIG. 3.

Fig. 1.—Original Turn-down eyed hook, with draft-line below true plane of hook-shank.

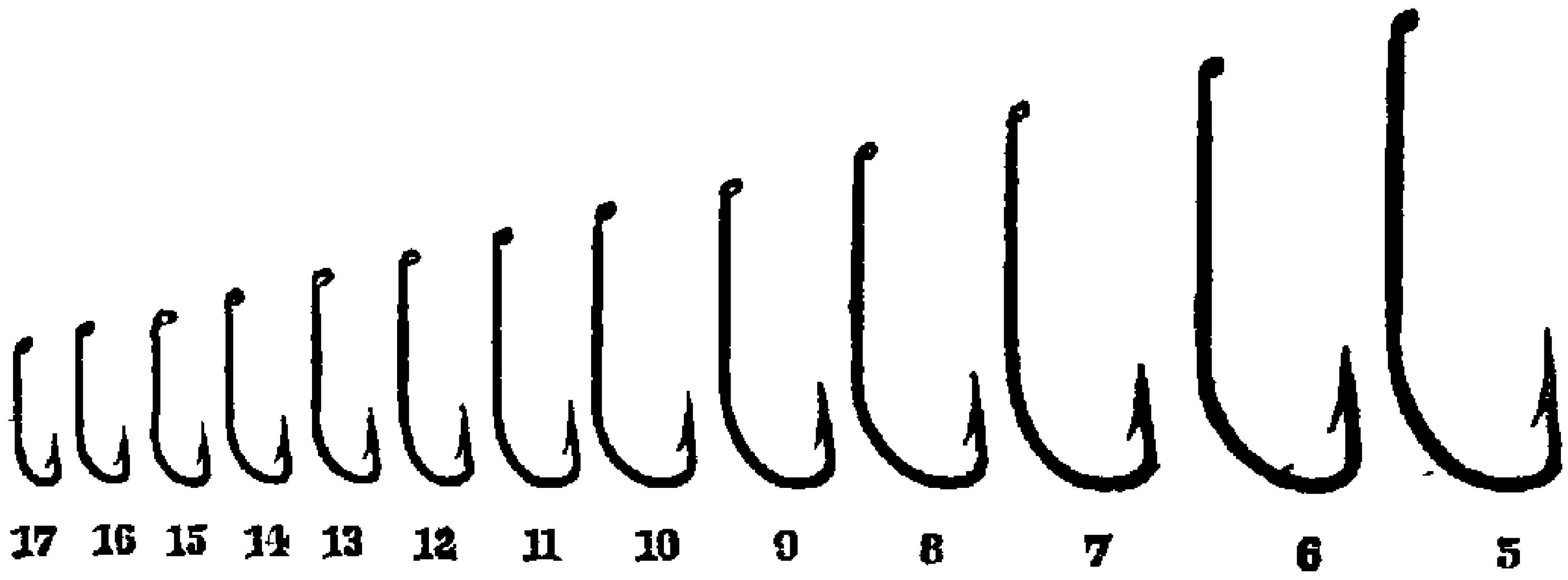
Fig. 2.—Turn-up eyed pattern, with draft-line above the plane.

Fig. 3.—New Patent Up-turn Shank and turn-down eyed hook—correct draft-line.

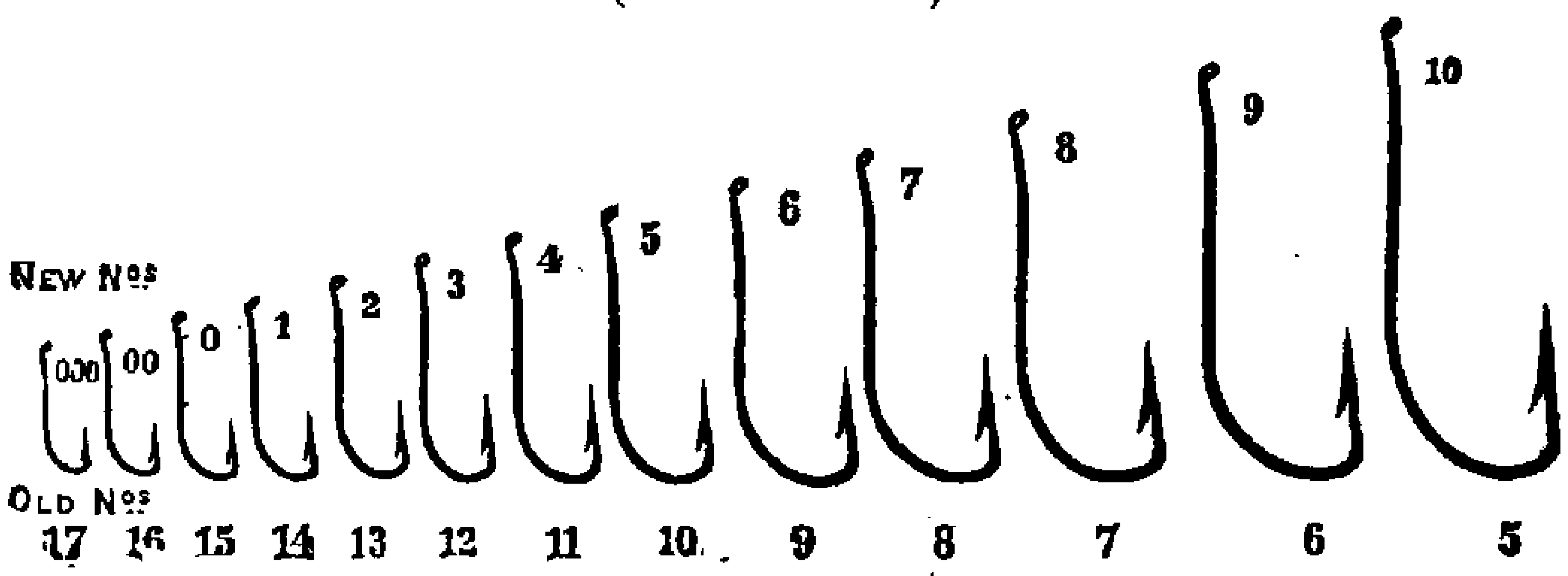
The general changes in construction between the old and new forms of the hook will perhaps be most readily understood by contrasting some of the smaller sizes of each, including the sneck-bend form, in which the patent is also manufactured of the sizes shown.

OLD PATTERN OF TURN-DOWN EYED 'PENNELL-SNECK' HOOKS. (Patent U.S.A.)

NEW PATTERN DITTO WITH UP-TURN SHANK. (Patent United Kingdom, and U.S.A.) Made both with 'straight' and 'twist' points.



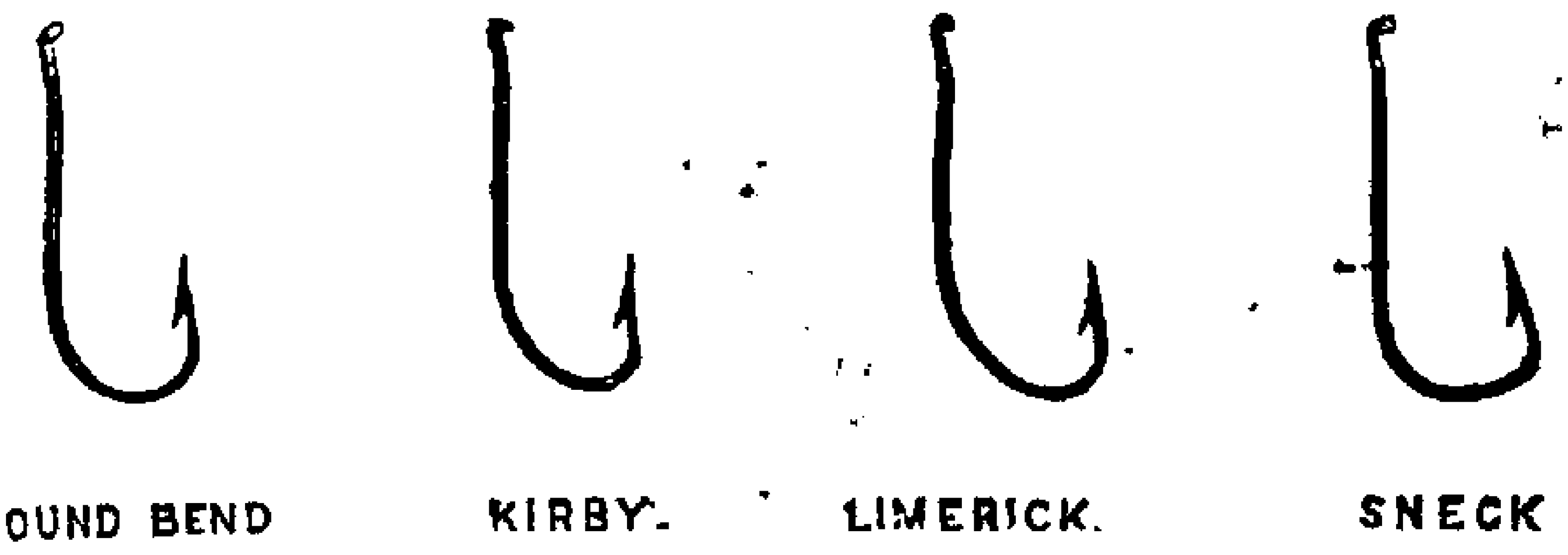
OLD PATTERN OF TURN-DOWN EYED 'PENNELL-LIMERICK' HOOKS.
(Patent U.S.A.)



NEW PATTERN DITTO WITH UP-TURN SHANK. (Patent United Kingdom, and U.S.A.)

I have used both bends—the Limerick and the Sneck—with nearly equal success, but my inclination is rather to prefer the sneck pattern for small river flies, and also for lake brown-trout flies; and the Limerick for anything larger, including sea-trout flies, and of course salmon flies.

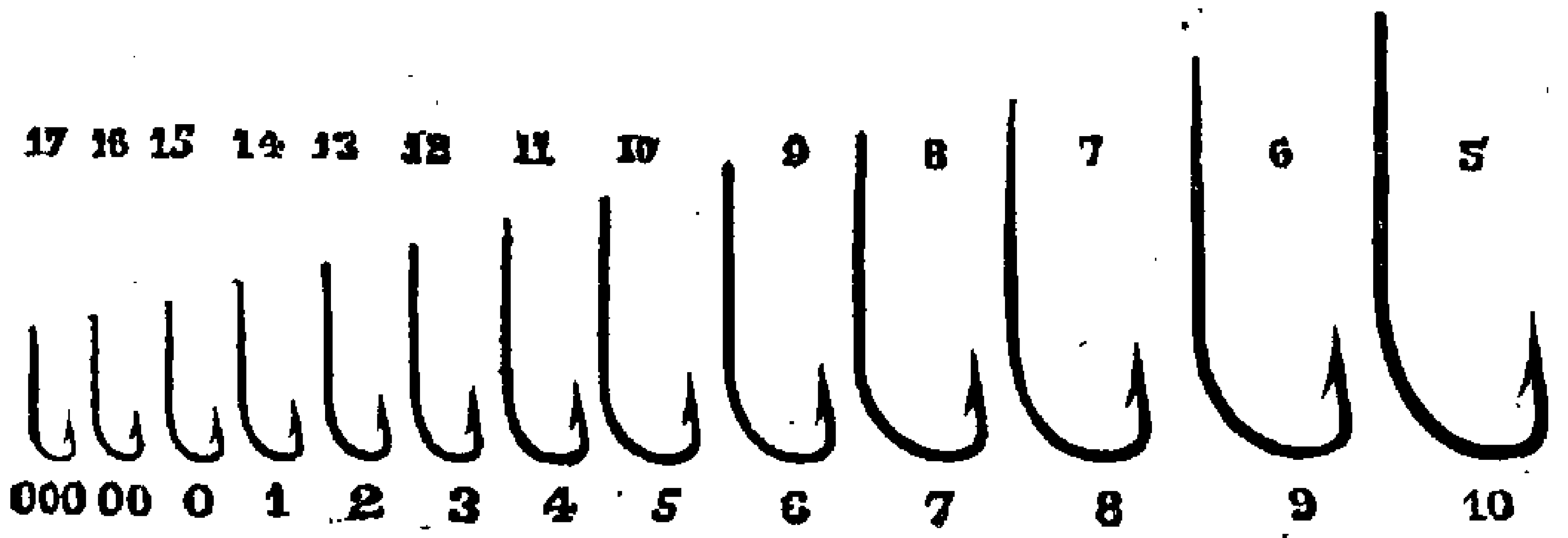
The following diagrams show the appearance of the up-turn shank and turn-down eye as applied to four of the most ordinary bends of commerce.



It may, perhaps, be well for convenience of reference to repeat here the smaller sizes of Limerick hooks with plain shanks, 'un-eyed' (upper figures, 'old' or 'Redditch' scale;

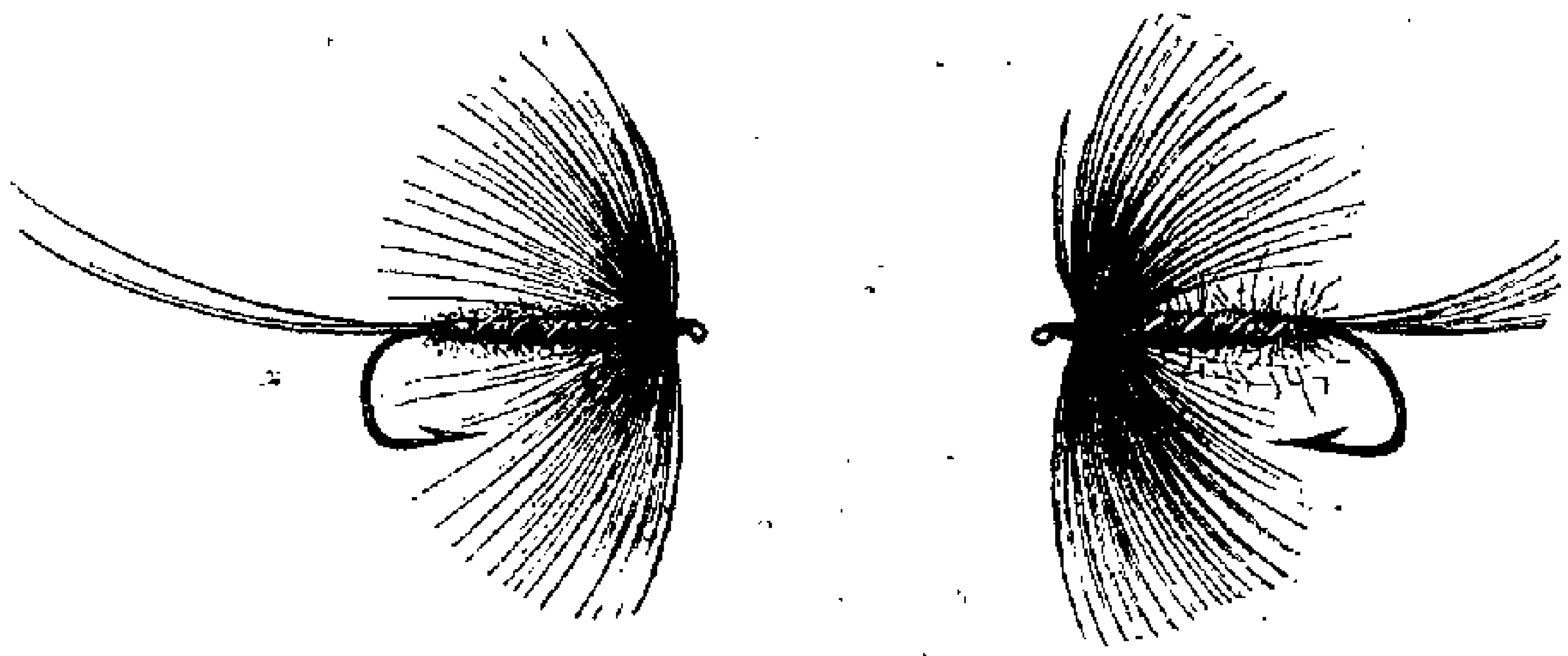
lower figures, 'new' scale), as well as the tapered-shank sneck-bend hooks, which latter are made with points both straight and 'twisted,' or 'snecked.'

'PENNELL-LIMERICK' HOOKS WITH PLAIN SHANK.



'PENNELL-SNECK' HOOKS WITH PLAIN SHANK.

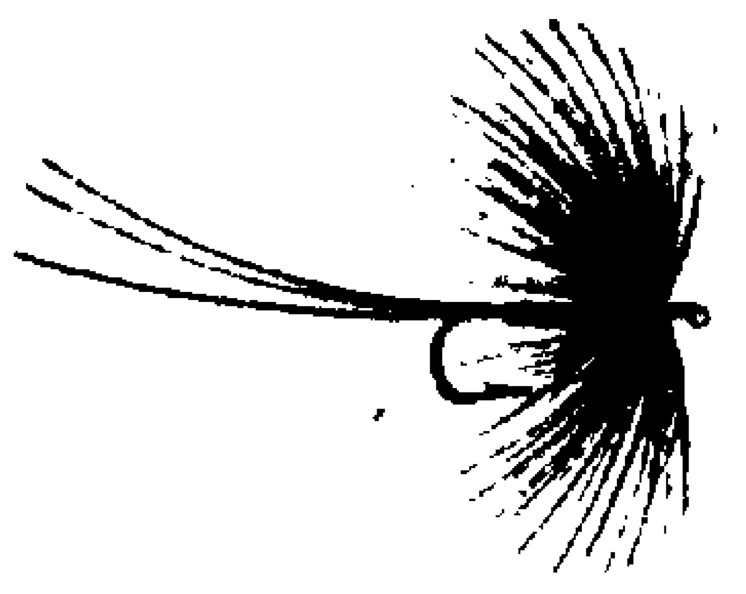
The diagrams represent two lake flies tied on the two different bends,—that on the sneck bend the 'Hackle Red' for brown trout, and that on the Limerick the 'Hackle Claret' for sea-trout. The formulas for dressing these, with some other patterns of my Hackle flies for sea- and brown-trout, which I have found very successful, are given further on. (*See* Index.)



HACKLE RED. HACKLE CLARET.

LAKE FLIES DRESSED ON PATENT EYED HOOKS WITH UP-TURN SHANK.

A small stream trout fly ('Furnace brown') on a sneck-bend is also figured.



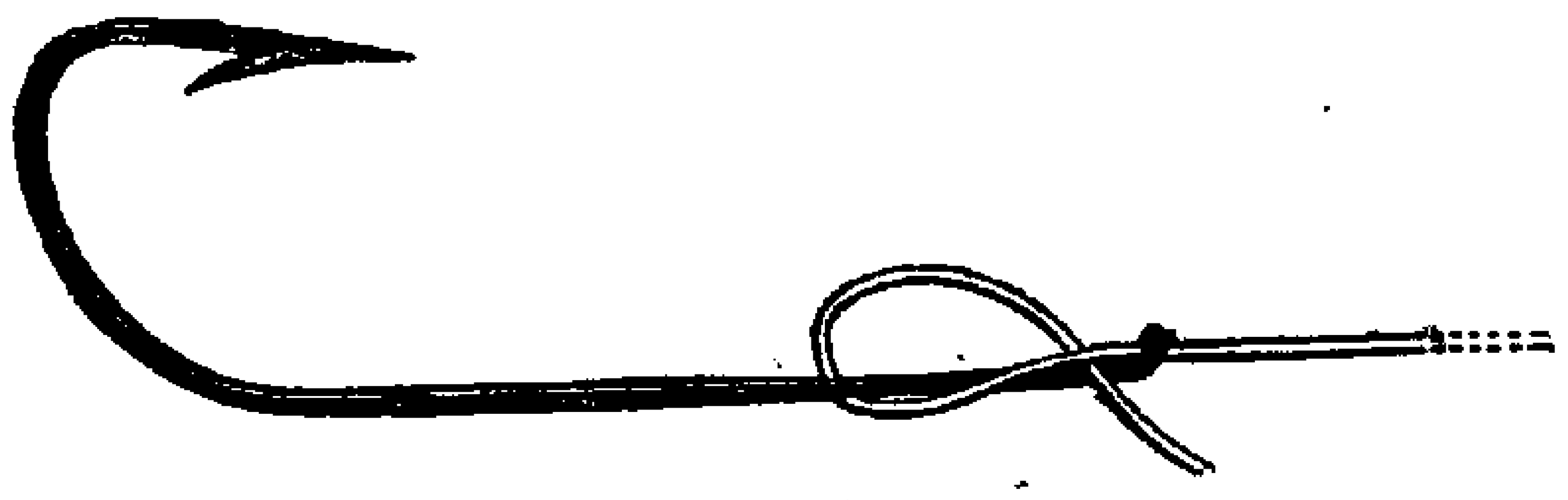
'FURNACE BROWN,' DRESSED ON PATENT SNECK-BEND UP TURN SHANK EYED HOOK.

The great thing in dressing all flies on these eyed hooks is to leave clear the 'neck,' as shown in the diagrams, to receive the jam knot. The length of the hook-shank is specially designed to allow of this.

ATTACHMENT FOR TURN-DOWN EYED TROUT HOOKS BY THE 'JAM KNOT.'

The great advantage—if I may venture so to speak of my own system—possessed by the turn-down eyed hook over all other forms of hooks whatsoever with eyes or loops, is the supreme simplicity and rapidity of its attachment to, and disengagement from the line by means of the Jam Knot. *In from* 10 *to* 15 *seconds one fly can be taken off and another substituted*; and that with unfailing certainty and *malgré* whatever the elements may operate to the contrary.

The engraving below—enlarged for the sake of readier illustration—exemplifies the *principle* of the Jam Knot attachment before the line is drawn tight—the tightening, of course, producing the 'jam.'

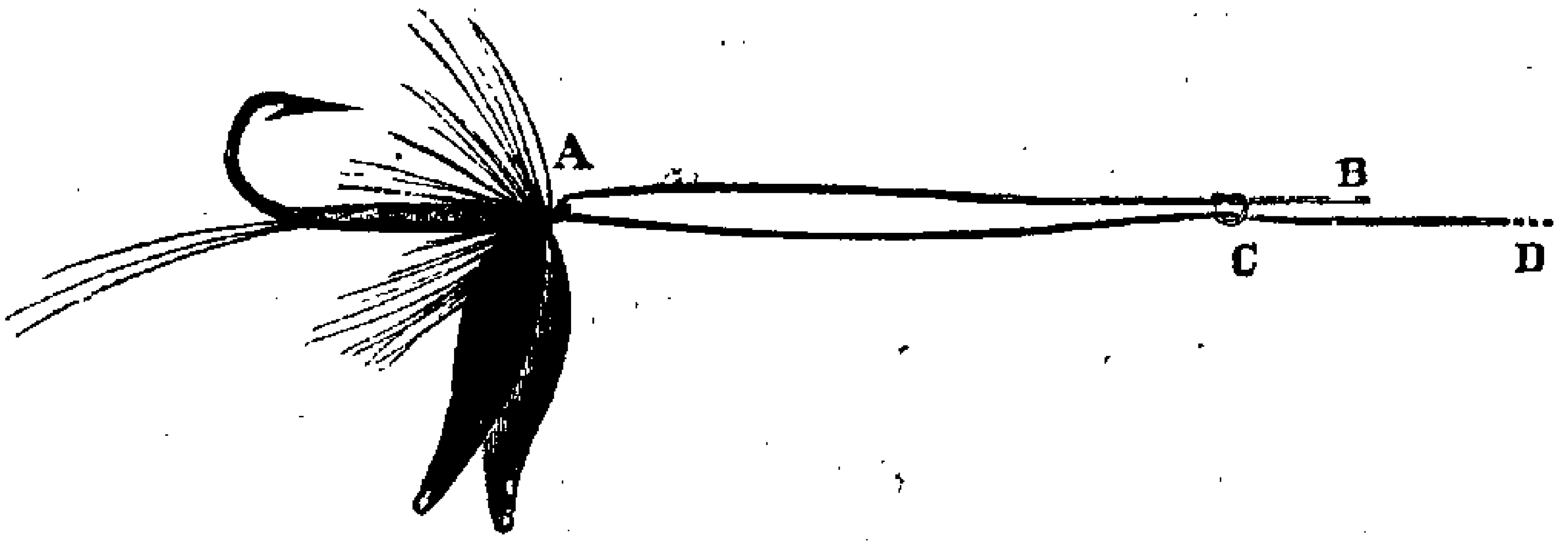


PRINCIPLE OF THE JAM KNOT ON A BARE HOOK, MAGNIFIED.

As this cannot so readily be seen on a fly, it is here represented on a bare hook.[1]

[1] Actually the jam knot is unsuited to a bare hook, as, where there is no fly-head to keep it in its place, it is possible for it to slip up the shank and thus

In practice the jam knot is produced '*automatically*,' and is so perfectly simple, and quick in manipulation that, as I say, I can tie it complete in 15 seconds. The veriest tyro ought to master its principle at the first attempt, and after a few essays tie it by the water-side almost as rapidly as I can myself.

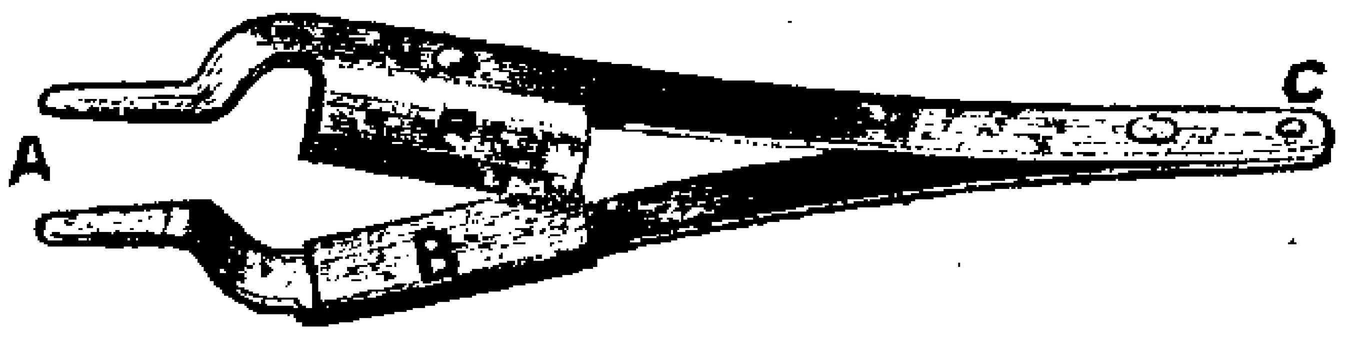


AUTOMATIC METHOD OF TYING THE JAM KNOT.

The fly being held in the left hand *with the metal eye* (A) *turned upwards*, 3 or 4 inches of the gut line are pushed through it from below. The fly is then 'let go' and a slip knot (C) made with the gut-end (B) round the line (D). [This is the point at which the process is seen in the cut.] The slip knot is not drawn quite tight, but left as shown—just open enough to pass comfortably over the metal eye. The fly is now taken again with the left hand, and the line pulled steadily by the right, until—aided when need be by the thumb and finger—the noose of the slip knot passes *over* the metal eye of the hook, when, on the line being pulled tight, the jam knot *forms itself*; and the process is completed by cutting off the waste gut-end[1] to within $\frac{1}{8}$ or $\frac{3}{16}$ of an inch, according to the

loosen the jam. Full instructions for using and attaching the turn-down eyed hook for the ordinary purposes of bait-fishing and all kinds of sea-fishing are given in Vol. II.

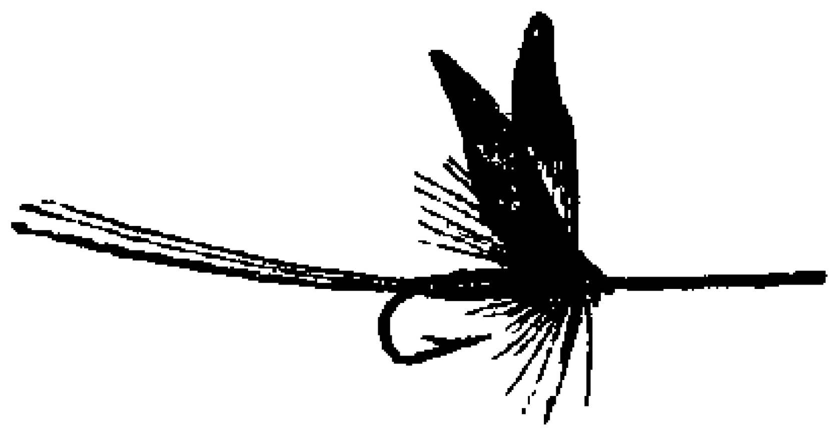
[1] Having often experienced great inconvenience from the want of a fine pair of tweezers in manipulating gut-knots, loose hooks, eyed flies and so



GUT-CUTTERS AND TWEEZERS ($\frac{5}{8}$ actual size).
A, Tweezers. B, Cutters. C, String-hole.

forth, I thought of combining tweezers with a pair of cutters, answering, so far as gut is concerned, the same purposes as a pair of scissors. From this

size of the fly and fineness of the gut. The finer the gut the longer should be the end left over.



JAM KNOT COMPLETE.

There is no advantage with the jam knot in cutting off the gut too close, as the free gut-end which should be left over mingles naturally with the hackles of the fly. After cutting off the waste gut it is convenient to *nip* the free end down with the thumb nail in the direction of the hook-bend. This may be repeated whenever the flies are examined, which, of course—as with ordinary gut-flies—they should be at intervals, to see that the gut has not frayed at all at the head, and also that the free end has not by any accident been drawn in or shortened to the 'unsafe' point.

During the last few years, including the present season, 1889, I have caught, I should say, at least a thousand white and brown trout, weighing from a few ounces up to three or four lbs., in both stream and loch, with flies dressed on the turn-down eyed hook, and attached by the jam knot—sometimes on traces fine even to the fineness of 'Bullmer's gossamer gut'—and I cannot call to mind a single instance in which the knot has been proved to have failed. Moreover (a hint to the novice) flies thus attached very rarely *flick off.*

With small flies the simplest way, when the gut becomes frayed at the head by wear and tear, is to cut or break the fly

little invention, which I registered a year or two ago under the name of the 'Combined Gut-cutters and Tweezers,' I have found much practical comfort, and, indeed, seldom start on a fishing expedition of any sort without first suspending a pair from my button-hole—a position in which they are most readily available, and least likely to disappear when wanted. In the use of eyed hooks especially—one of the charms of which is the facility offered for rapidly changing hooks or flies when needful—I have found them almost indispensable. They are obtainable at all tackle shops.

off close, disengage the waste end from the eye of the hook, and re-knot. With larger flies and stout gut the jam can generally be loosened by merely pushing the gut backwards through the eye; but this is a matter of unimportance, as in either case the operation is only one of a few seconds.

The perfecting of the jam knot for the trout-fly was the ingenious discovery of Mr. Alexander J. Campbell, and without it I do not hesitate to say that the general acceptance of the system of turn-down eyed hooks which I am now sanguine enough to hope for, could never have been anticipated. The inconvenience—trifling though it was in comparison with previous methods of attaching eyed hooks—of tying the jam knot in the presence of the fly-wings and hackles, was originally one of the serious obstacles to be overcome. This 'knotting-on difficulty' has, in fact, hitherto had a large share in preventing the adoption of the eyed-hook principle.

Now, however, that this difficulty has been effectually overcome, and a perfect form of attachment as well as a perfect hook are within the reach of fly-fishers, the result can hardly be doubtful. Indeed, the advantages of attaching the fly direct to the casting-line are so obvious, and the disadvantages of the old lapped-on gut system so self-evident, that only one result could well follow. Amongst these disadvantages it may be instanced:—

A. That when once the 'gut hook' artificial fly gets 'worn at the head'—which in actual work very soon occurs—it becomes thenceforth worthless.

B. And when another fly is substituted, the gut must be soaked first (in practice generally in the saliva of the mouth) to enable it to be properly knotted on. If this soaking, or sucking, be not thoroughly done the fly will most likely whip off.

C. But even after properly knotting the two gut links together, it is ten to one that the link on which the fly or hook is lapped does not correspond with that

at the end of the line: it is too thick, or too thin; too dark, or too light. From this results a linear disfigurement, or an inharmoniousness of tint (or both), at the very point where a perfect taper and complete uniformity of colour are of vital consequence.

These are some of the most salient defects of the system, almost universally adopted until the last few years, of lapping on hooks and flies to separate strands of gut. Of minor, but still serious drawbacks, must be reckoned the difficulty of carrying about a sufficient supply of 'gut hooks'—or still more of flies—of all needful sizes, and the destructive effects of time upon the contents of the 'store box.' Apart from 'moth,' this happens partly owing to the 'rotting' of the gut at the point of contact with the steel hook shank, and partly to the desiccation (drying up) of the wax on the lapping by which the gut is attached.

And all these defects—defects inherent in the principle of lapped-on hooks, and which cannot be gainsaid—are at once overcome by the new eyed-hook system.

It is to that system, then, to which I refer when I say that by it *all* the disadvantages attaching either to the artificial fly or plain hook lapped on separate strands of gut are entirely got rid of.

By knotting on the fly or hook direct to the main line ('gut-trace,' 'collar,' 'casting-line,' 'bottom-line,' 'foot-line') the fly or hook that has become worn at the head can be removed, and in a few seconds re-attached to the same already well-soaked, well-tapered, and evenly tinted line; thereafter remaining as serviceable as ever.

The minor drawbacks alluded to of the old system are also obviated by the new, as the necessary selection of flies and hooks can be kept in stock for years without any fear of deterioration. The economy in the matter of space, both in the stock-box and fly-book, is, moreover, considerable. As

many flies or hooks as are required for a day's fishing could be carried, I might almost say, in the waistcoat pocket.'

Published testimonies to the success of the eyed-hook principle generally are too numerous to attempt even to give a summary of them all here. Mr. H. S. Hall, one of our very best clear stream fly-fishers, who has lately written an ably-practical essay on the 'Dry Fly,' has, it is well known, given his entire adhesion to eyed hooks, with which, indeed, his name has been long identified. Mr. Frederic M. Halford, author of the lately published charming monograph on 'Floating Flies and how to dress them,' and also of a subsequent exhaustive treatise on 'Dry Fly-fishing,' is another apostle of the new *culte*. His first chapter is devoted to eyed hooks, and the opening sentence runs thus:

'But before many years are passed the old-fashioned fly, dressed on a hook attached to a length of gut, will be practically obsolete, the advantages of the eyed hook being so manifest that even the most conservative adherents of the old school must, in time, be imbued with this most salutary reform.'

After enumerating several of the more obvious advantages already noticed, Mr. Halford continues:

'Flies dressed on eyed hooks float better and with less drying than those constructed on the old system. . . . Another and, in my opinion, paramount benefit is, that at the very earliest symptom of weakness at the point of juncture of the head of the fly and gut (the point at which the maximum wear and tear takes place) it is only necessary in the case of the eyed fly to break it off and tie on afresh, sacrificing at most a couple of inches of the fine end of the cast; while in the case of the hook on gut, the fly has become absolutely useless and beyond repair. It must also be remembered that with eyed hooks the angler can use gut as coarse or as fine as he may fancy for the particular day, while with flies on gut he would require to have each pattern dressed on two or three different thicknesses.'

Of course books on Fishing (I do not refer to catch-penny productions, or to trade circulars) do not appear every day, or every year, and those I have quoted from are, so far as I know, the most recent, and therefore authoritative, on subjects the importance of which has only lately begun to be recognised.

I dismiss this part of my subject with one or two brief

extracts from the published opinions of practical fly-fishers who have tested and adopted my turn-down eyed hook system for trout flies :—

MR. CHOLMONDELEY-PENNELL'S TURN-DOWN EYED TROUT HOOKS.

'Having,' the writer states, 'made a thorough trial of flies dressed on these hooks, against flies dressed on ordinary hooks with gut lappings,' he thus sums up :—

'The result of the week's fishing, during which my worst day was four brace, and my best nine brace, is, on every point, favourable to the flies tied on to turn-down eyed hooks. I may summarise these points as follows :

'1. The flies never "flick" off.

'2. They can be changed—attached and detached—in less than half the time.

'3. They are stronger; because, whenever the gut gets at all frayed at the head it can be at once shifted (re-knotted on), whereas with flies lapped on gut the weakening at the head commences very soon, and any change involves sacrificing the fly; consequently the fly is, in many cases, used long after it has become weak. But beyond this there is, I think, an actual extra strength imparted by the form of knotting to the eyed-hooks (Mr. Pennell's 'jam knot') as compared with the ordinary lapping.

'4. The turn-down eyed hooks appear to me to hook more fish in proportion to rises, and to lose fewer fish after being hooked.

'I have never met with an instance of the knot slipping.'

Another fly-fisher writes :—

'The "jam knot" is the simplest and probably the strongest fastening for trout and grayling flies ever invented; whilst at the same time—owing to the hook-eye having only to be large enough to pass the gut once through it—it is also the smallest and the neatest.

'*The combination of Mr. Cholmondeley-Pennell's turn-down eyed hooks with the "jam knot" produces an absolutely perfect attachment, and finally solves the great eyed-hook problem.*'

'The greatest boon to trout-fishers since the invention of the artificial fly.'

And again :—

'SIR,—Allow me to add my testimony to that of Mr. Asbridge Hall as to the excellence of Mr. Cholmondeley-Pennell's turn-down eyed hook system with the jam knot. I have been using nothing else constantly for the last month, and cannot say too much in their, and its, praise. The ease and simplicity with which the flies are attached, even in the most boisterous weather, the saving of both time and trouble by the quickness of the jam knot, and the escaping of all need of soaking and tying on flies, really leave nothing to be desired; and though I must admit I started with modest expectations of success,

or I might even say with almost a prejudice against "them new-fangled notions," as my keeper expressed it, I confess practical trial has converted me entirely to Mr. Pennell's system, and I shall never use any other in future.

'DEVON MINNOW.'

A few parting words before I close this subject.

There have, it is well known, and as I have already explained, been at various times attempts to introduce some form of direct attachment between the trace and its steel appendage, and many forms of eyed hooks have been invented with that object: hooks with turn-up eyes, hooks with 'needle' eyes, hooks with 'straight' eyes, hooks with 'crooked' eyes—*cum multis aliis*; but none of these have obtained any very general or ready acceptance on the part of the fishing public. Indeed I may say that all the patterns of eyed hooks I have personally examined and tested are open to serious practical objections of one sort or another—either in connection with the make or position of the eye, or in regard to the mode of knotting it on to the line—objections which doubtless explain their partial or non-success. I trust, however, that their inventors—pioneers, explorers, and discoverers in the new field, to whose labours I more than any one else am indebted [1]—will not imagine that I desire for one moment to depreciate in any way their excellent work; still less to exalt my own small efforts at their expense. Indeed, as I have before said, it is want of space simply, and not want of courtesy, which precludes my attempting, within the limits at my disposal, to pourtray and describe their several ingenious plans—the progenitors, so to speak, of my own system—and especially the turn-up eyed hook of my friend Mr. H. S. Hall,[2] which is now used by many first-rate fly-fishers, whose enthusiasm carries them triumphantly over all obstacles, or what I regard as

[1] To Mr. R. B. Marston, of the *Fishing Gazette*, the columns of which have for several years been frankly and freely opened to the discussion of this all-important angler's *quæstio vexata*, the thanks of the angling public, and my own in particular, are also largely due.

[2] Mr. Hall's hooks are attached by the single slip-knot, as recommended for a salmon fly (see p. 12).

defects. . . . I have, nevertheless, a plain task set before me, of which I must acquit myself in a plain businesslike way. What I have to say—and without the saying of which this chapter would have no *raison d'être*—is that in my judgment all these systems of eyed hooks *are* defective, and that their defects have proved a bar to their general adoption; whereas, on the other hand, I believe that the system which I now present for judgment to the parliament of anglers is 'free from blemishes'—a thoroughly workable and practical system, complete in all its details; that, as compared with the old gut-lapping, it is more artistic, more efficient, more economical; and that sooner or later these qualifications will force its general acceptance, if not by this generation of fishermen, by that which will follow it.[1]

THE CHOLMONDELEY-PENNELL

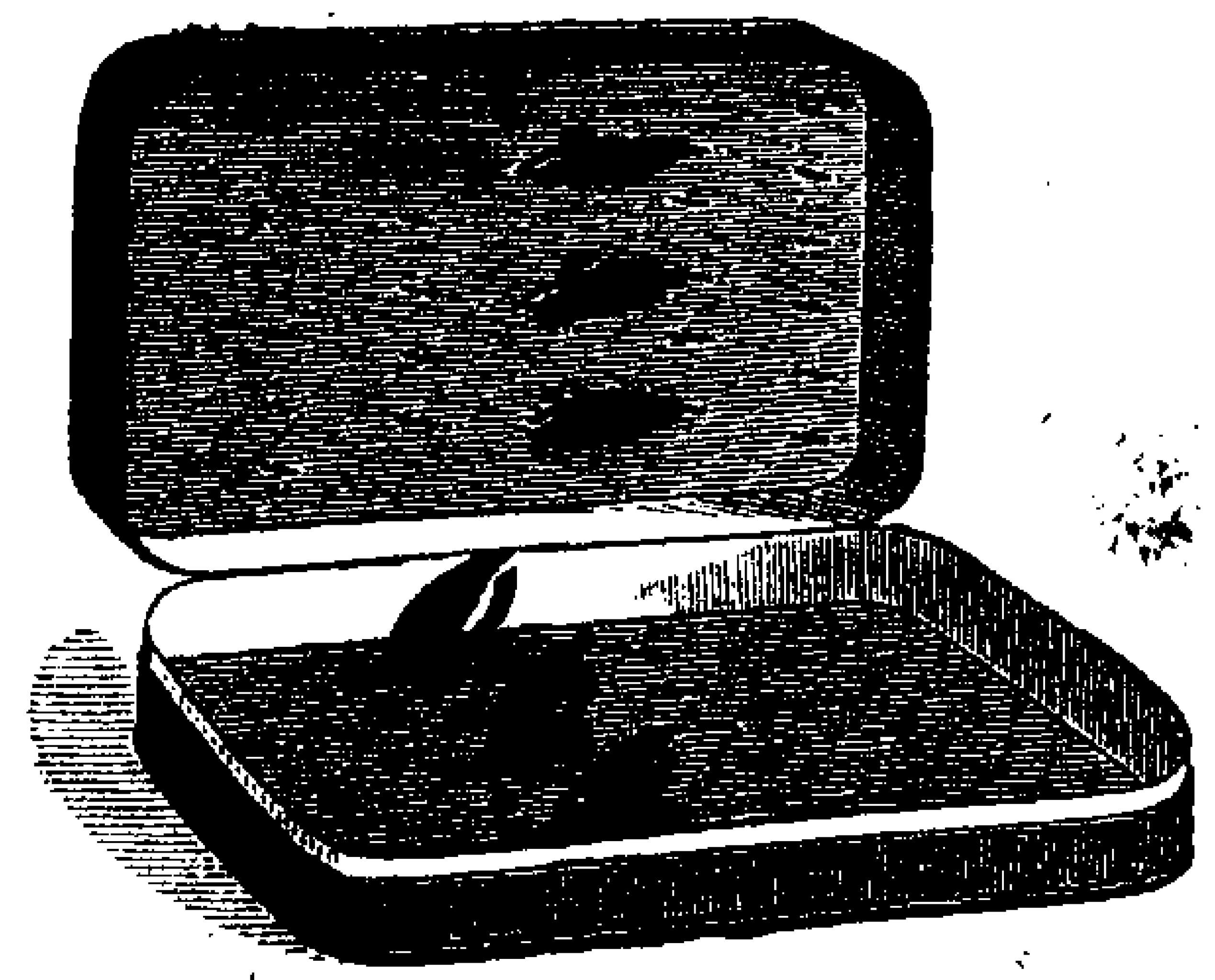
TURN-DOWN-EYED

FISHING-HOOK

I have entrusted the manufacture of all my patent and other hooks to Messrs. Wm. Bartleet & Sons, the well-known hook-making firm at Redditch, who have for several years acted as my only wholesale agents, and whose success in manufacturing the various patterns leaves nothing to be desired. The perfection of their fish-hooks and general fishing tackle is proved by their having obtained—in addition to numerous other awards—a Gold Medal at the Universal Exhibition, Paris, 1878, and a Gold Medal at the Berlin Fisheries Exhibition, 1880; whilst this year (1889), at the International Exhibition, Paris, they have again been awarded a Gold Medal.

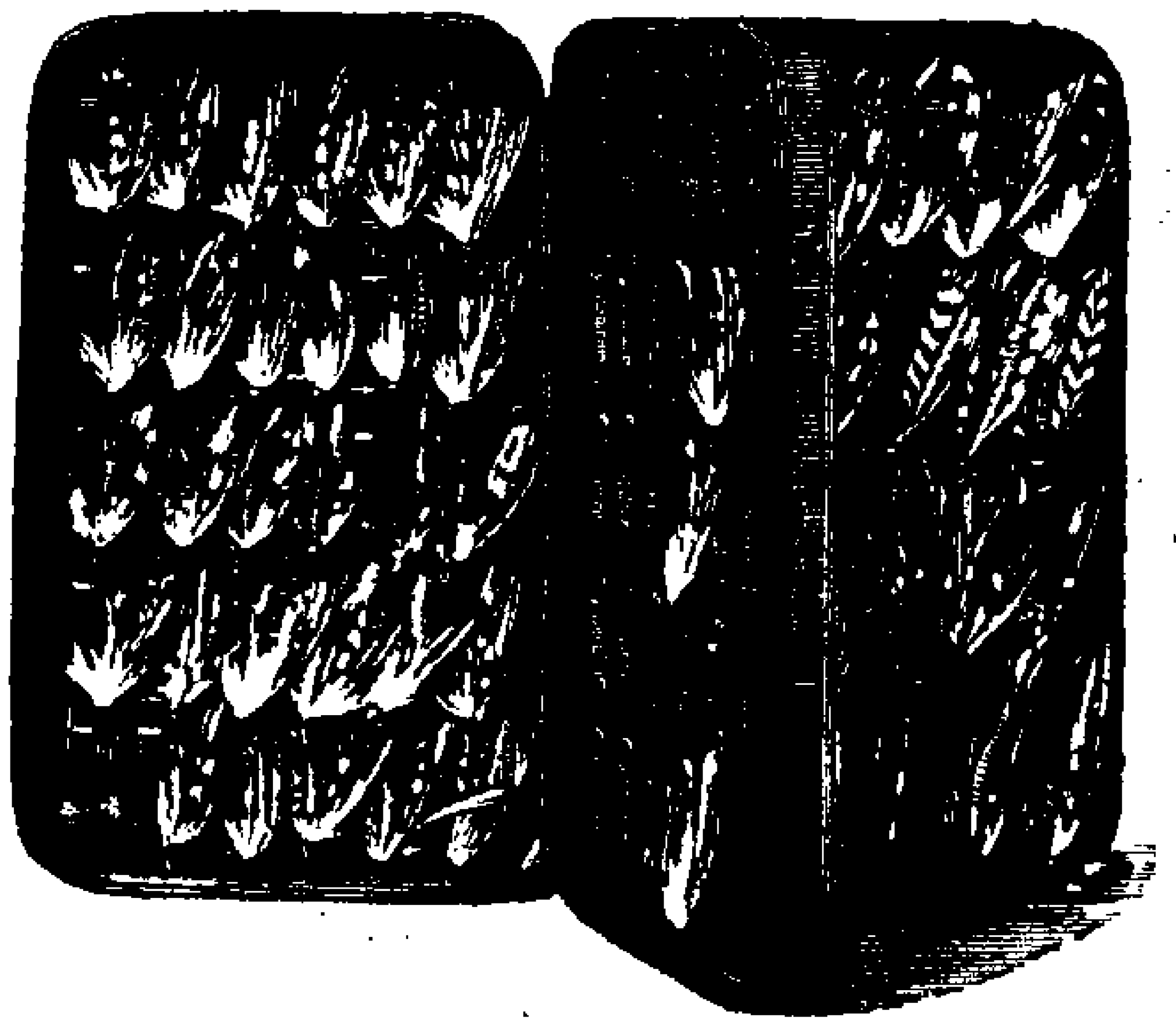
[1] The eyed-hook system is, of course, equally applicable to 'bob' flies, or 'droppers,' as to 'tail' flies, or 'stretchers.'

The very general adoption of the Eyed-hook system has called forth numerous ingenious arrangements in the way of boxes for storing and carrying the flies. The following are amongst the best of these useful inventions, which in the cases of boxes intended for salmon flies are equally applicable to flies with ordinary gut loops.



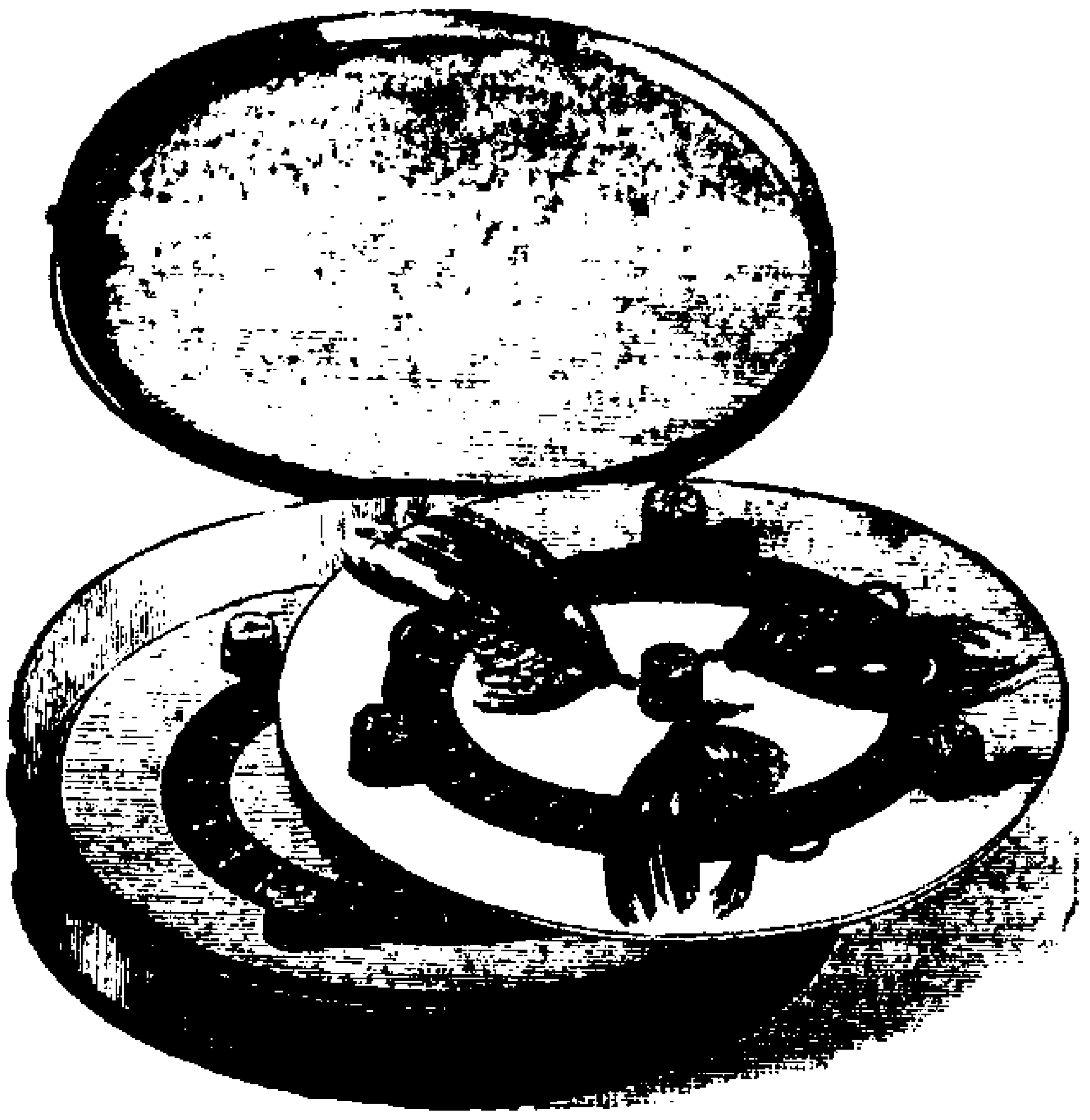
MR. ASHLEY DODD'S DOUBLE EYED-HOOK SALMON-FLY BOX. (Farlow.)

Japanned block tin, lined with cork. 8 inches long, by 4 inches wide, 1½ inch deep. The metal points shown in the cut represent so many fixed projecting 'pins,' over which the loop or eye of the hook slips. A slight pressure backwards then embeds the hook-points in the cork, the double attachment thus securing a firm 'hold.' For single-hooked flies this box is equally good.



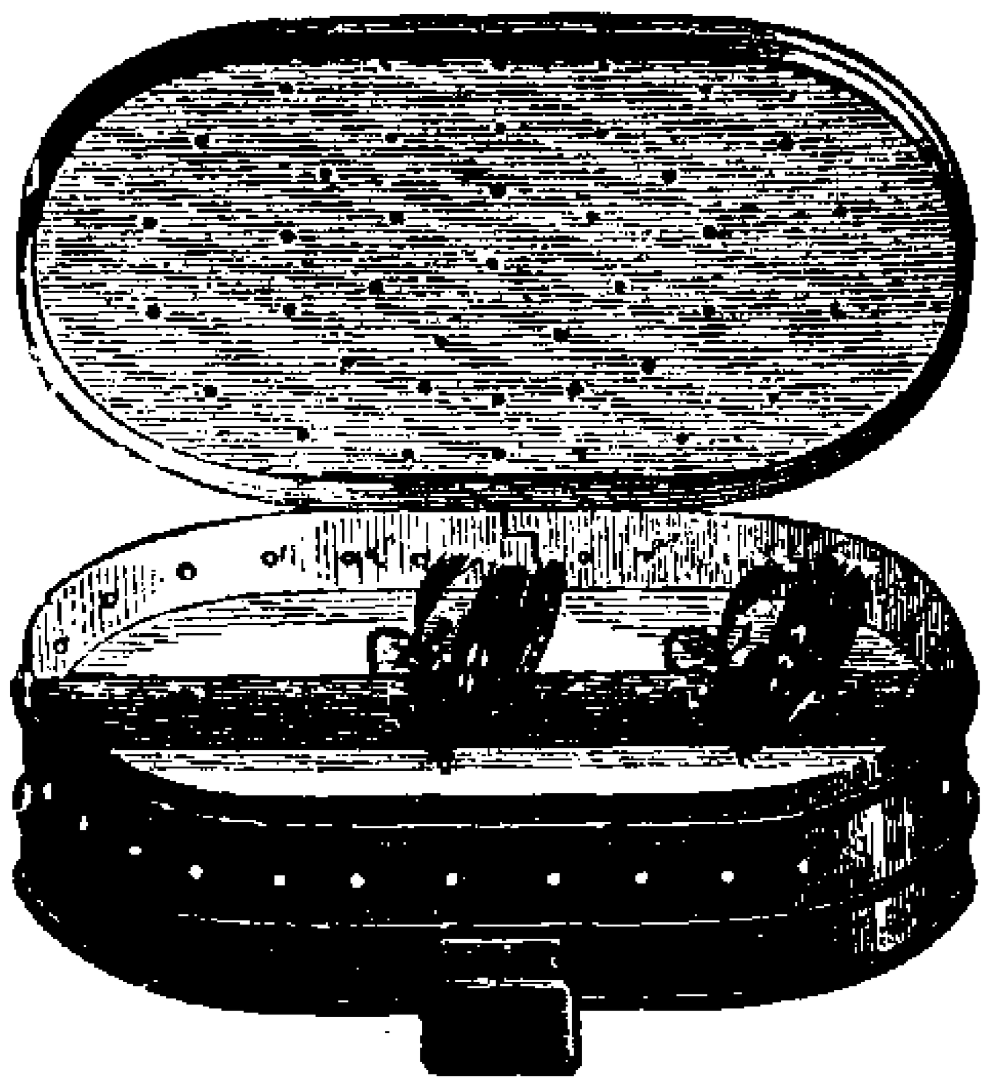
'PORTABLE' SALMON-FLY BOX. (Malloch.)

Japanned tin. Length, 8 inches; width, 5 inches; depth, 1¼ inch. In this box each fly is secured by the head of the hook slipping under a 'notched' steel spring.



THE 'EXCELSIOR' SALMON-FLY BOX. (Farlow.)

Japanned black outside, white enamel inside. Width, 5 inches; depth, 1 inch. Contains 3 parchment trays, each tray holding 12 flies. For medium and small double or single hook flies.

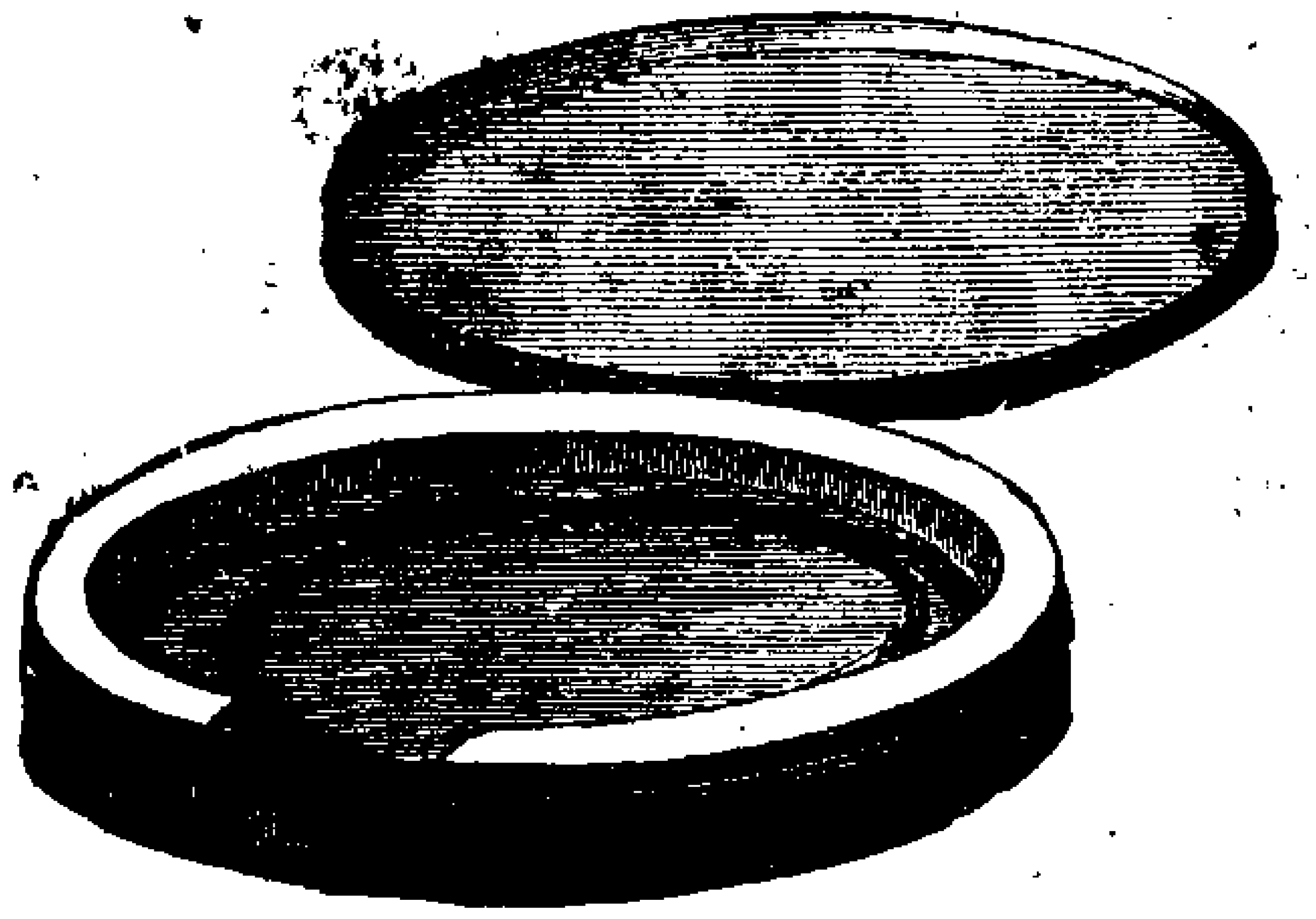


UPPER PART.

LOWER PART.

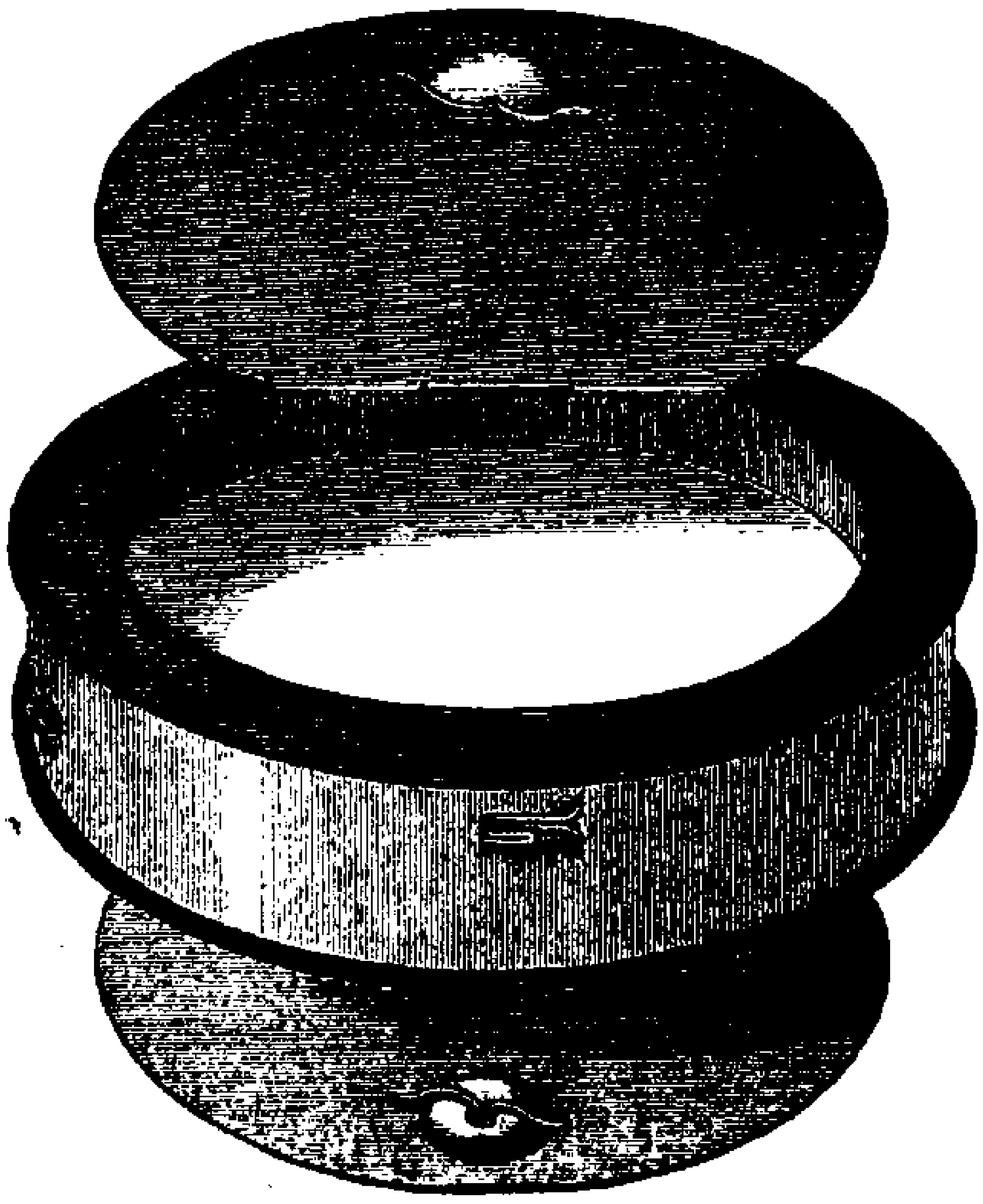
THE 'COMBINATION' SALMON-FLY BOX. (Farlow's Registered.)

Japanned black outside, and white enamel inside. The upper part has a strip of cork to stick wet flies in, after use; the sides and lid are perforated to allow of air passing freely through, and so drying the flies. In the lower part, the centre box is intended to carry sufficient flies for a day's use, and the outer space, which has a rim to prevent the gut from being cut in closing, is for casting lines. Length, 5¼ inches; width, 4½ inches; total depth, 1½ inch. Upper part inside, ⅝ inch deep; lower part inside, ⅝ inch deep.



'SAFETY' CAST BOX. (Farlow.)

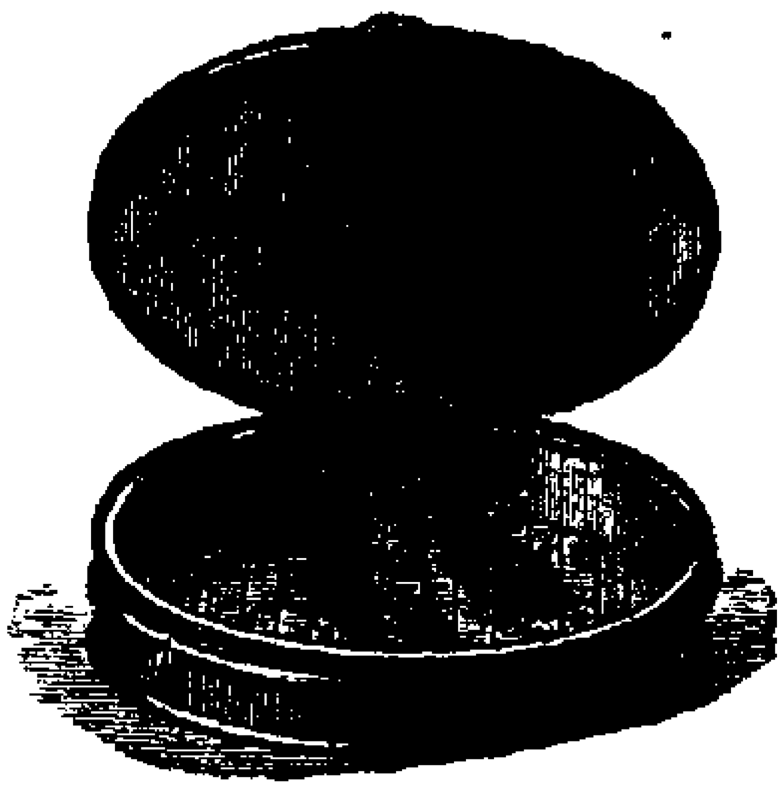
Japanned black outside, and white enamel inside. Made with a flanged rim, which is useful to prevent the casts from being damaged in closing the box. Sizes—4¾ inches wide, ¾ inch deep; or 5 inches wide, 1 inch deep.



BOX FOR HOLDING FLIES AND CASTS. (Farlow.)

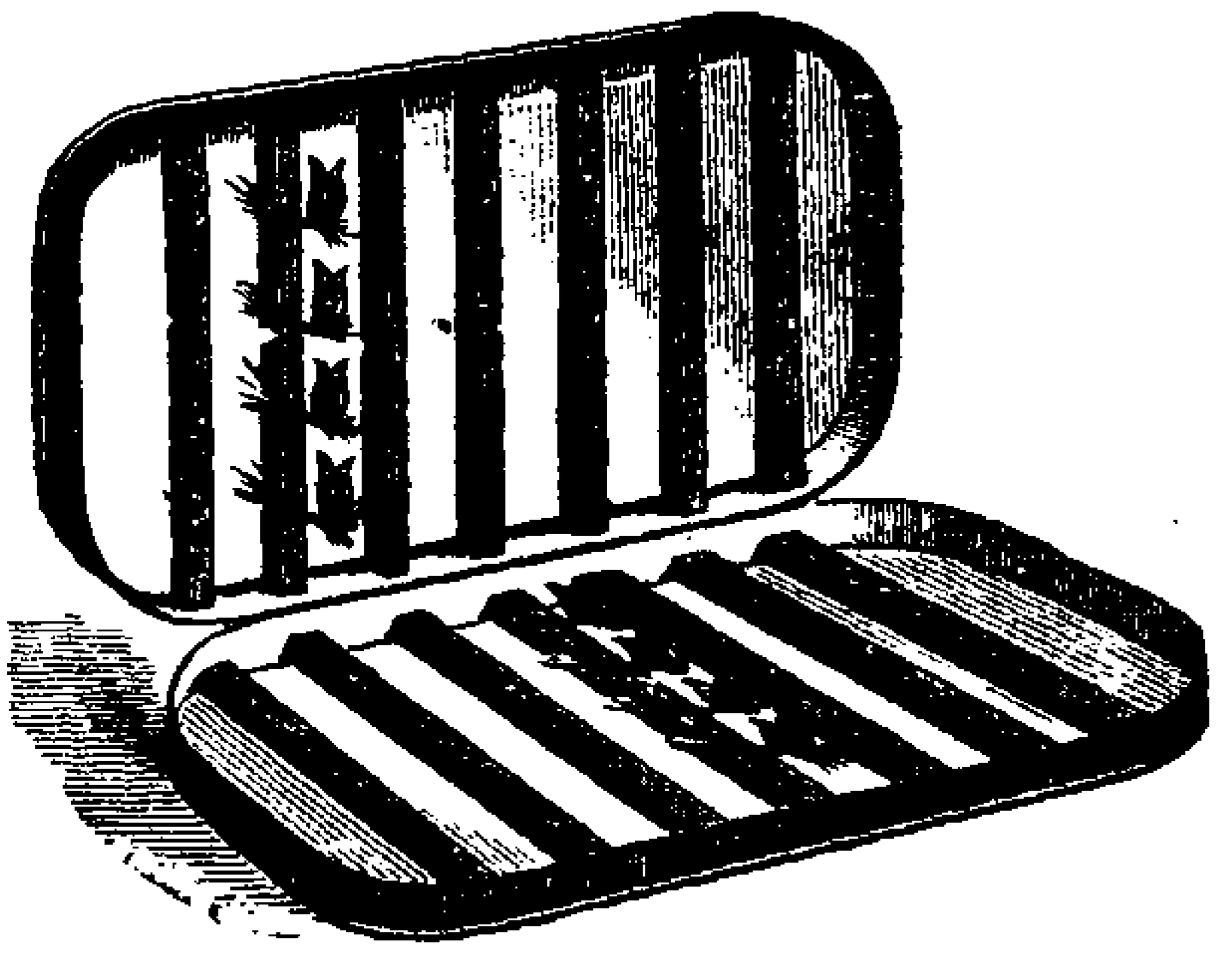
With flannel band round box to wind wet casts with flies on.

The following are specially designed for Eyed Trout flies :[1]—



'POCKET BOX' FOR EYED TROUT-FLIES. (Bowness.)

Japanned tin, oval, cork-lined. 3½ inches long by 2¾ inches wide. Admirably adapted for carrying in the pocket a selection of flies for the day's fishing. The cork is, or should be, corrugated, or cut in grooves across and across. The same remark applies to all cork lined fly-boxes, as the flies very quickly lose their hold in smooth or uncorrugated cork.



EYED TROUT-FLY BOX. (Farlow's Registered.)

Japanned tin, divided with strips of cork, each strip supported in a tin groove to prevent its moving, and to enable the cork to be replaced when worn out. Weight of box, 6 oz. ; length, 6 inches ; width, 3½ inches ; depth, ¾ inch. when closed.

Arranged to hold seven dozen flies.

The advantages of this box are that when the flies are fixed in the cork, the wings and hackles come between the divisions and so prevent crushing.

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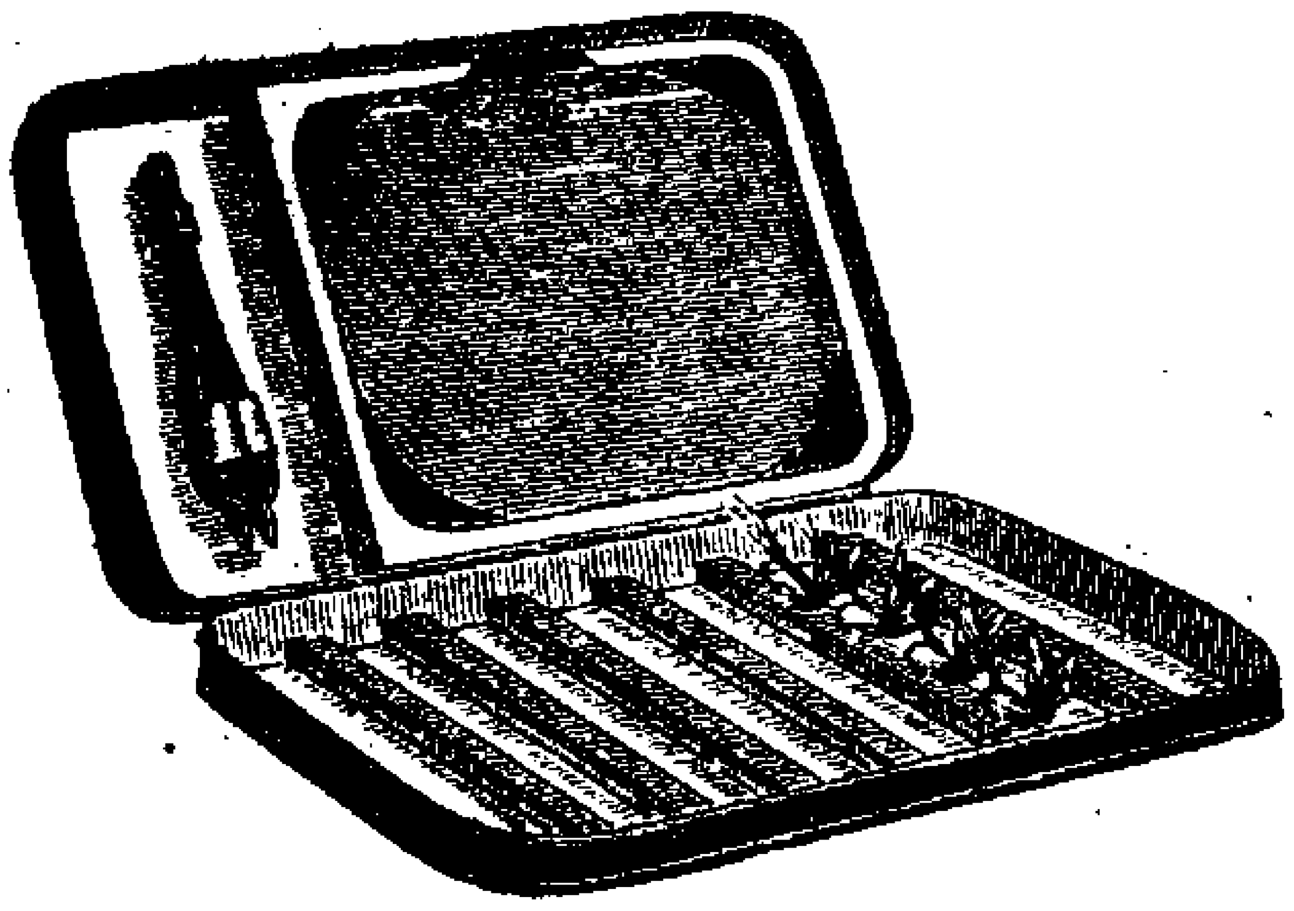
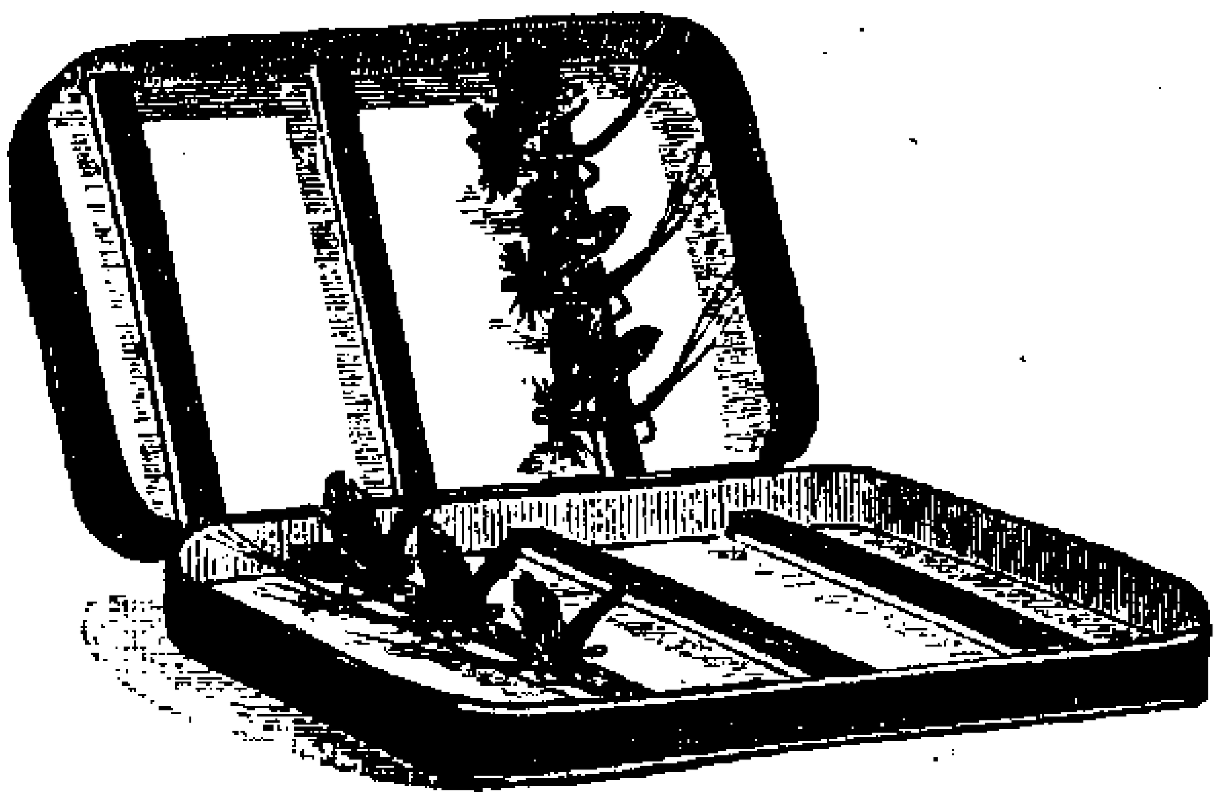
1 Messrs. Bowness inform me that the best preservative for feathers and furs—and one which they always employ themselves—is 'naphtholine,' obtainable from any druggist. A few pieces, 'pea-size,' will last *several years.* Camphor, which is what I have hitherto used, soon evaporates.



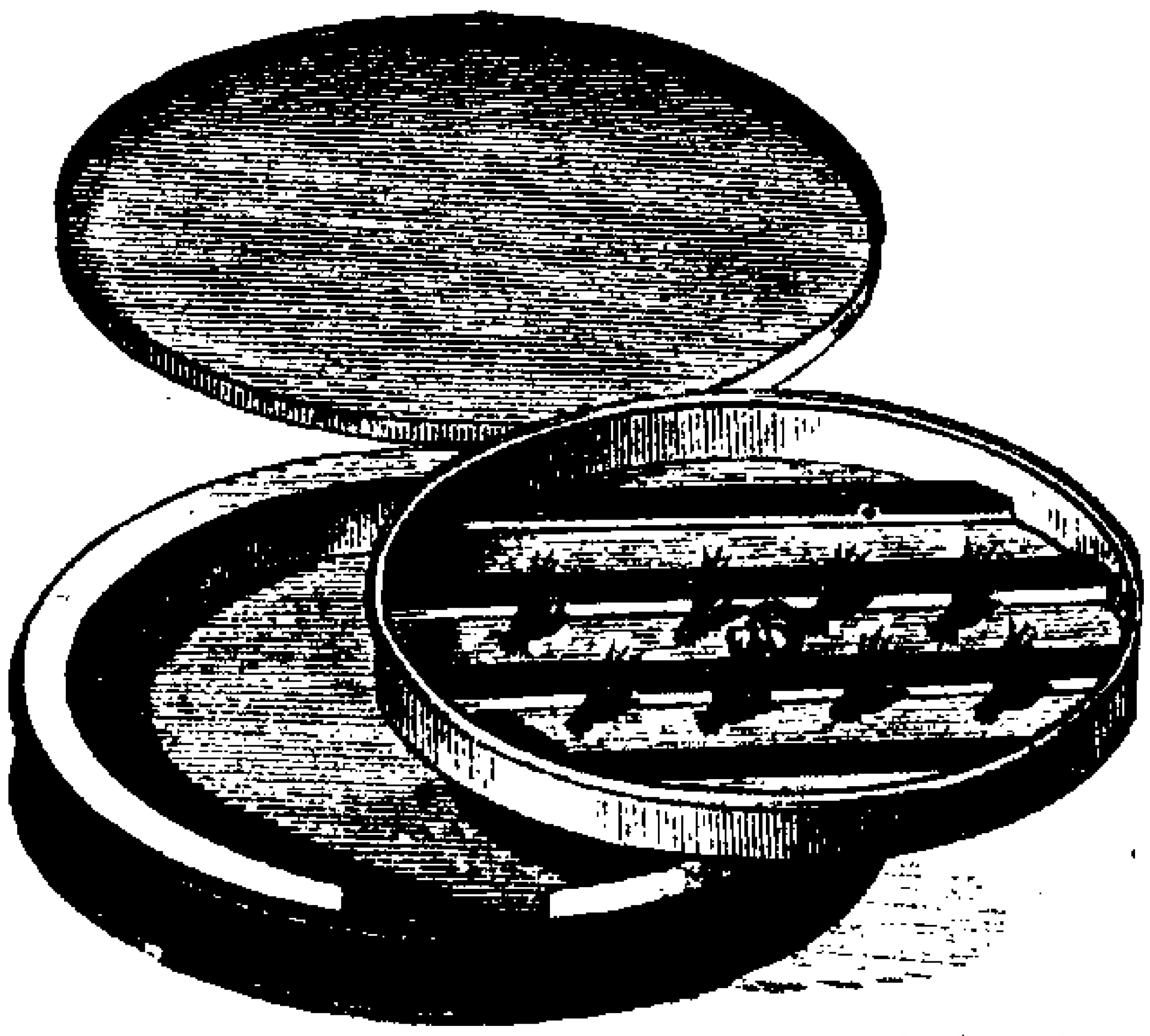
'TEST' EYED TROUT FLY AND CAST BOX. (Farlow's Registered.)

Black japanned tin outside, white enamel inside, with cork strips, as before. Size, 6 inches long, 3½ inches wide, ¾ inch deep when closed. Weight about 6 oz. Will hold four to five dozen flies, with casts, and 'gut cutters and tweezers,' as figured.



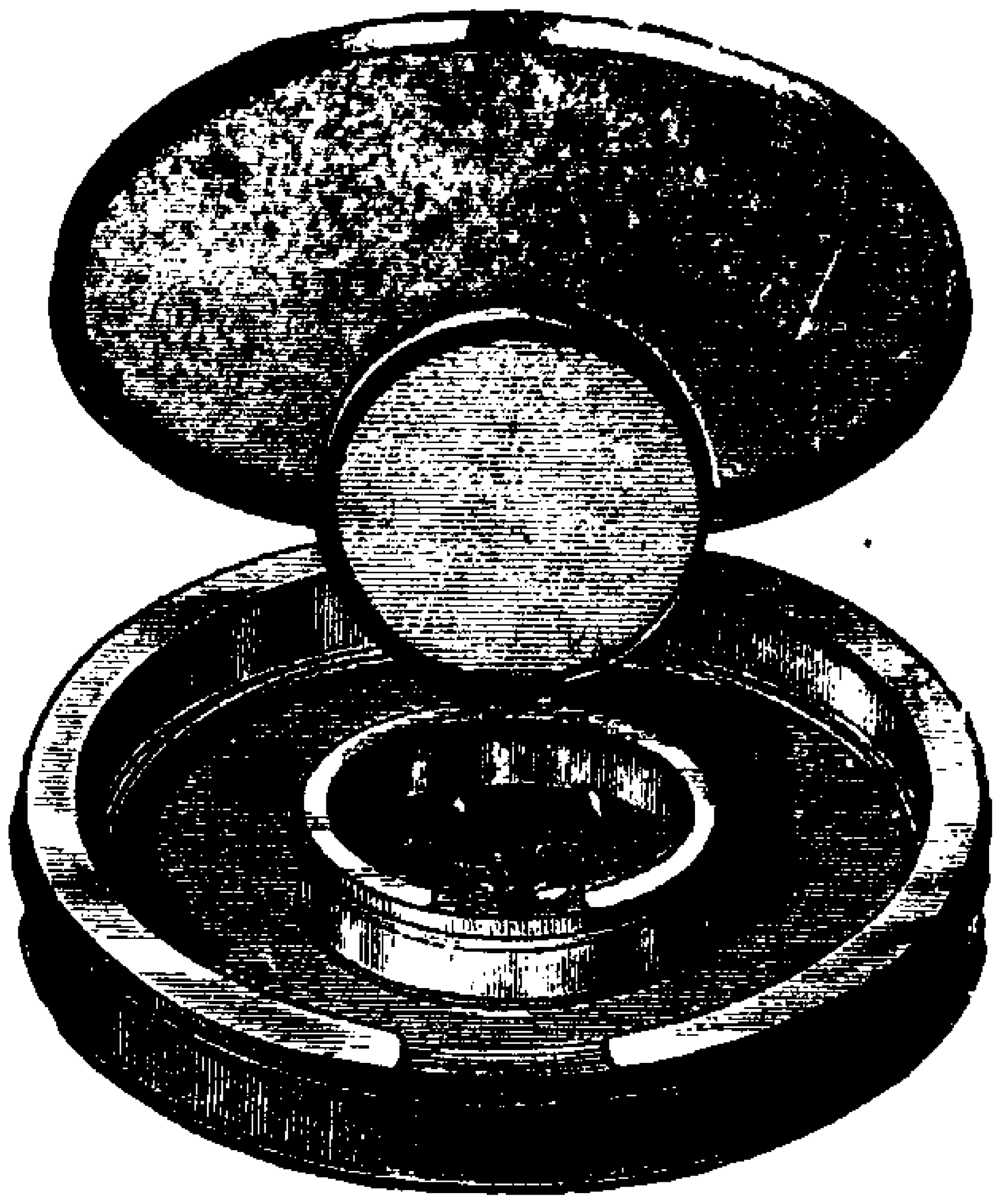
EYED MAY-FLY BOX. (Farlow.)

Japanned tin, divided with strips of cork, as in the preceding. 6 inches long, 3⅝ inches wide, 1 inch deep.



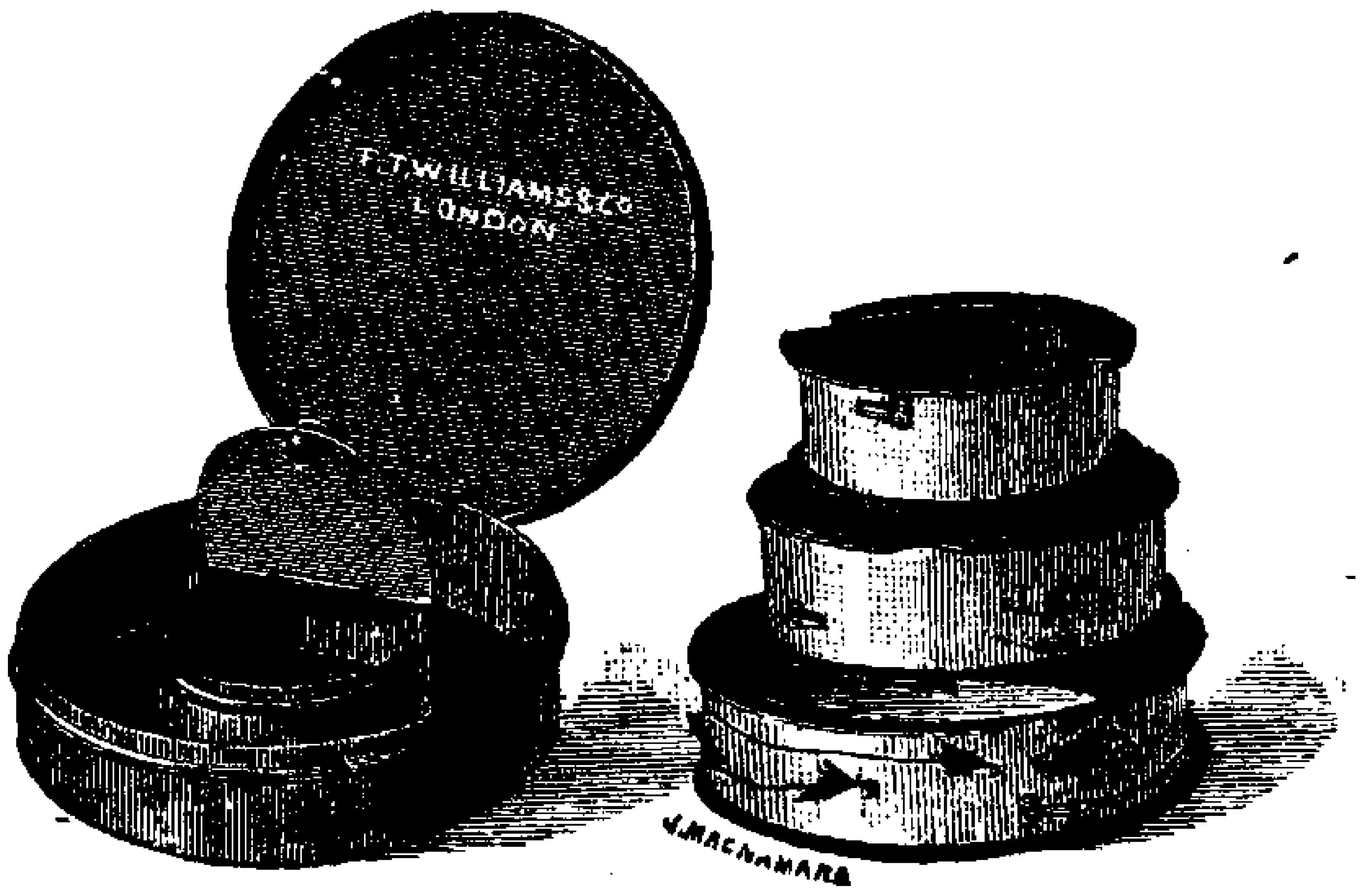
SAFETY CAST AND FLY BOX. (Farlow's Registered.)

Japanned tin. Constructed to carry casts at bottom and eyed flies in the tray. The tray is divided with strips of cork, and will carry six dozen flies. Size, 5¼ inches wide, ¾ inch deep.



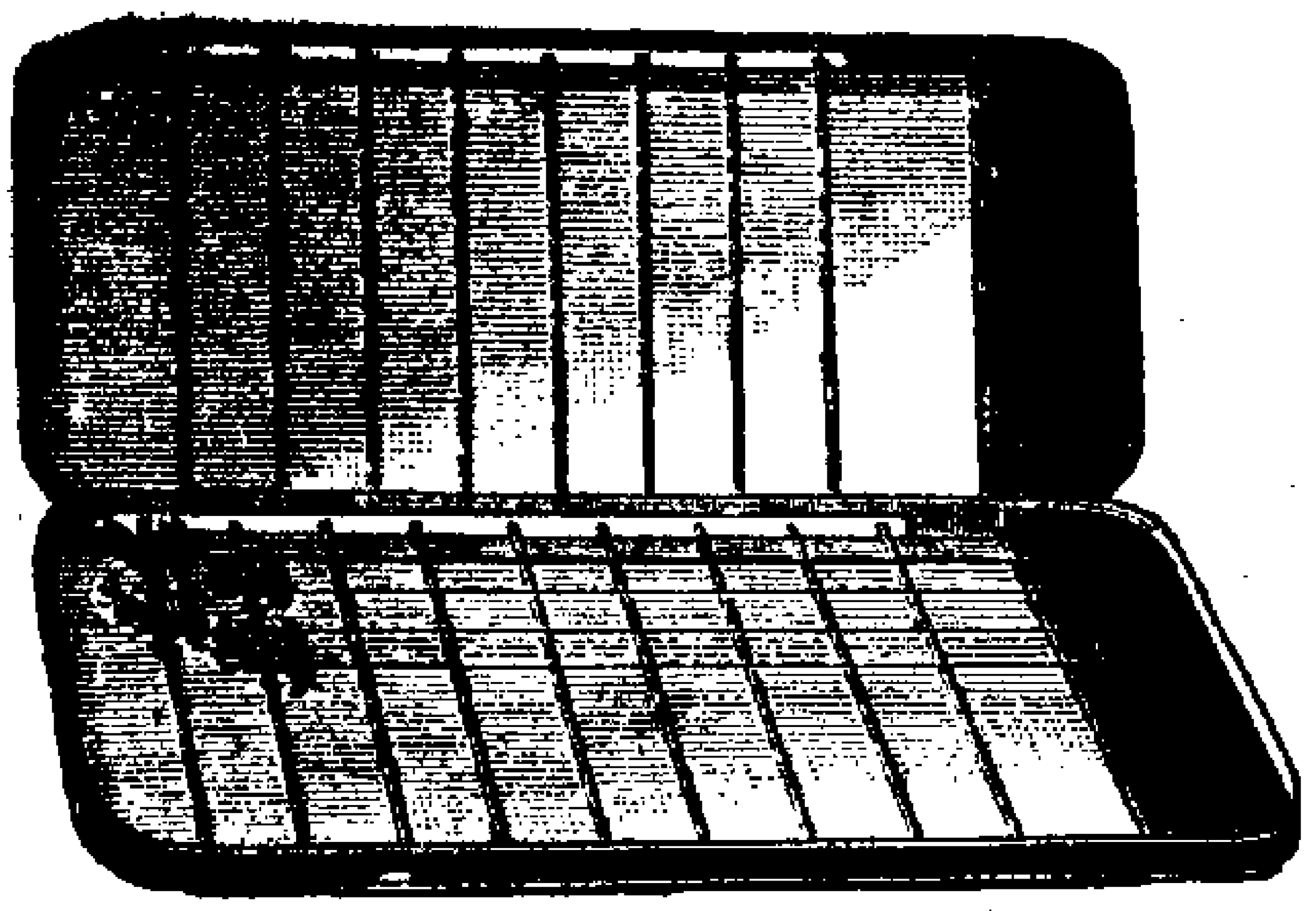
'DOUBLE SAFETY' CAST AND FLY BOX. (Farlow.)

Size, 4¾ inches wide, ¾ inch deep. Designed to hold eyed flies in the centre box, and casting lines surrounding it.



THE 'LATHAN' CAST BOX. (F. T. Williams.)

A succession of circular tin boxes, fitting one into the other, and coated with felt, which may be kept moist if desired, so as comfortably to hold half a dozen casts ready damped for use. Outside measure, 3½ inches wide by 1½ inch in depth. Adapted to either eyed or gut flies, but primarily intended for the latter.



THE 'HENRY' FLY BOX. (Farlow.)

Intended for gut flies. Japanned black outside, white enamel inside, with wires across for attaching flies, and at the end to hold the gut; also piece of spongio piline to keep the gut moist for attaching to the casting line. Length, 9 inches; width, 3½ inches; depth, ¾ inch; weight 8½ oz.

A box with a similar object has been designed by Messrs. F. T. Williams, of Great Queen Street, W.C., in which the gut is kept moist by means of wetted felt.

Next to the fly and its etceteras comes the Casting Line, involving matters connected with the selection, knotting, twisting, staining, &c. of gut.[1] The best gut is the longest and roundest, and the most transparent; an observation which applies equally to salmon and trout gut—natural and drawn. For practical purposes these *desiderata* must be considered in conjunction with, if not, indeed, made subordinate to, the question of the fineness or strength of the gut in proportion to the fishing for which it is to be used. To get salmon gut which fulfils all the conditions pointed out is becoming yearly a matter of greater difficulty, and, I might almost say, of favour. A perfect hank of salmon gut can only be obtained, as a rule, by picking the strands out of a number of other hanks, which, of course, makes these considerably less valuable. Sixpence a strand—I have known a shilling a strand paid—for picked salmon gut is not at all an unusual or, indeed, unreasonable

[1] An account of the process of gut manufacture is given in the earlier editions.

price, having regard to the difficulty of obtaining gut of really superior quality, and the all-important part it plays in a sport which, if not quite so expensive as deer stalking or grouse driving, is certainly becoming rapidly a luxury that only rich men can hope to enjoy. As the rent of a salmon river, to say nothing of incidental expenses, may probably be reckoned at seldom less than three figures, it is really the soundest economy to begrudge no expense connected with the tackle, rod, &c., upon which the sport obtained for all this outlay depends. Moreover, as regards gut, I believe that the best, and, consequently, the most expensive, is, in the long run, actually the most economical if proper care be taken of it. A thoroughly well-made casting line of carefully picked salmon gut will outlast three or four made of inferior strands, and during all its 'lifetime' will be a source of satisfaction. The breaking dead weight strain of a strand of the stoutest salmon gut, round, smooth, and perfect in every respect, ought not to be less than somewhere between fifteen and eighteen pounds.

Why in the case of salmon gut, as in that of all other commodities, the demand does not produce the supply, it is difficult to see. Caterpillars ought to be easily cultivated one would say. Think of the number of strands which might be produced by the inhabitants of a single mulberry tree !—

Millions of spinning worms
That in their green shops weave the smooth-haired silk.

I cannot but believe also, that by the application to gut-making of the same energy and intelligence which is being applied all over the world to other manufactures, a much longer and generally more perfect 'staple' might be produced. From a quarter to a half of the actual gut of the silkworm appears to be lost by the present process, as will be seen on examining the waste ends of a hank of any sort of gut that has not been picked and 'lengthed.'

For gut of extraordinary quality and strength, as much as from 5*l.* to 7*l.* per hundred strands – wholesale price – is now

stated to be frequently paid in Marseilles—this gut being, it appears, principally exported to Constantinople. Some samples of the 1884 crop, tested by my friend Mr. R. B. Marston, broke at a dead strain of seventeen pounds. A writer under the signature of 'Creel,' mentions that some thirty years ago there could be found in the market a superior class of salmon gut now said to be unprocurable owing to the total extinction of the silkworm that produced it. 'Since this time,' he says, 'we have more than once been informed that a new breed of silkworm has been raised and encouraged in the South of France, introduced from Japan, possessing all the features of the former fine and strong gut which from its absence has caused the lament of many a veteran salmon fisher.'

In the selection of gut, aim first, as Chitty says, in his 'Fly Fisher's Text-book,' 'at that which is perfectly round,' to which end the best assistance the eye can receive is from the thumb and forefinger, between which the gut should be rolled quickly; if it is not round but flat, the defect by this process will be at once discovered. Next to roundness, colourlessness and transparency are the two points of most importance; and last—though, as some fishermen will perhaps suggest, not least—comes the question of length. Chitty, above named, gives for salmon gut—'the part used'—'sixteen to eighteen inches at least.' I can only say—I wish we may get it! In these degenerate days ten to twelve inches would be nearer the ordinary attainable mark, and for trout gut an inch or two more, say thirteen to fourteen, or, in exceptionally good strands, fifteen inches.

'Drawn gut,' as it is called, is simply gut that has been artificially scraped or fined down by being 'drawn' through a hole of a certain gauge or measure. For this purpose a steel plate is used having several holes or gauges diminishing gradually in size, and the 'face edges' of which are quite sharp. The gut is put through the holes in succession beginning at the largest, and ending with the smallest, when it has of course become of the desired fineness. The appearance of the gut

after undergoing this process is not, however, so clean and transparent as the undoctored material, and though it looks beautifully fine—and, indeed, is so—it commonly frays and wears out very rapidly when exposed to moisture or friction of any sort. Drawn gut is, however, extensively used for many of the finer sorts of fishing, both with fly and bait. For my own part I prefer to pay almost *any price*, so to speak, for the natural gut whenever it can be obtained of the requisite fineness. This, however, is not always.

Knotting.—There is a kind of 'endless' knot with which the casting lines prepared in some tackle shops are joined that seems for ordinary purposes to be about perfection ; but how this knot is tied is a trade secret which I have failed to find out. Decidedly the best as well as the simplest knot 'open to the public,' and one which is equally applicable to the finest and the strongest gut, is what is known as the single (and double) fisherman's knot (sometimes called 'water knot'), varied in the case of salmon gut, for heavy work, in the way described presently.

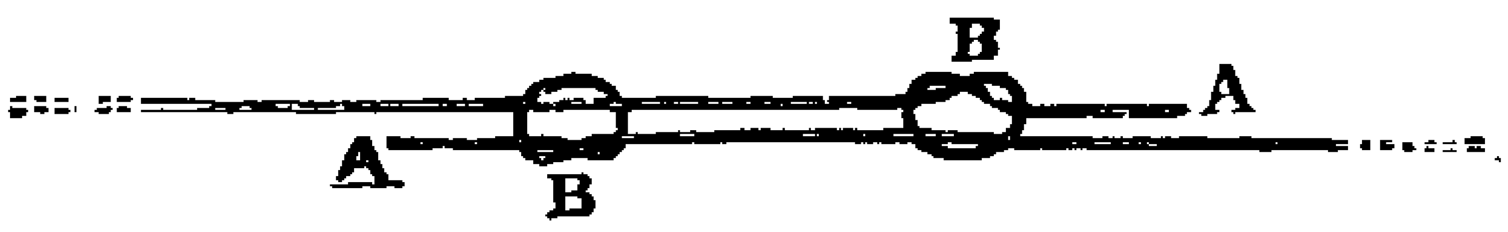


FIG. 1.—SINGLE FISHERMAN'S KNOT.

The gut having been thoroughly well soaked beforehand (in tepid water best)—which is, of course, a *sine quâ non* in all gut knottings—the two ends of gut, A, A, are laid parallel to each other, being held in that position between the first finger and thumb of the left hand in the position in which they are to be joined. A half-hitch knot, B, B, is then made by the right hand with the end of each strand alternately round the strand of the other, and each separately drawn tight, the two separate halves of the knot being finally drawn closely together and the ends cut off.

It has been pointed out that the single fisherman's knot—varied as I have described in the case of salmon lines—is all

that is required for any description of gut knotting. I should, perhaps, however, make an exception to this statement. In the case of drawn gut, and also in natural gut of *exceptional* fineness, the extreme limpness of the strands makes the single fisherman's knot very liable to 'draw' if the ends are cut at all close, as they should be on the score of neatness. In such cases it is, therefore, better to make the knot with two *double*, instead of two single, half-hitches; the end, that is, with which each half-knot is tied is passed twice instead of once round the central link and through the loop, in the manner shown in the engraving. This is the 'double' fisherman's

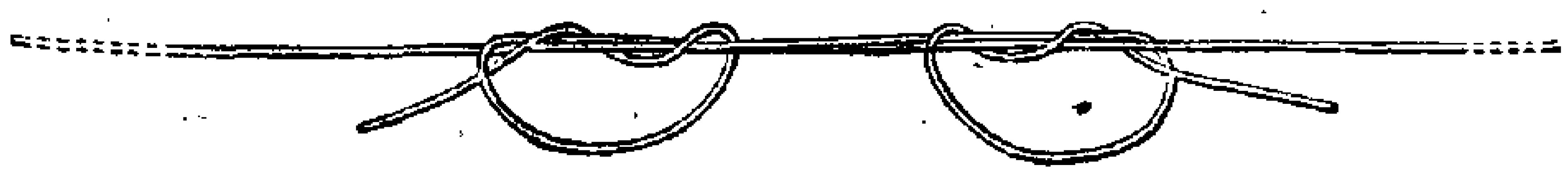


FIG. 2.—DOUBLE FISHERMAN'S KNOT.

knot. With very fine gut the increase in the size of the knot is so small as not to be worth considering, whilst the increase of strength obtained is of importance.

Except for salmon fishing, if a drop-fly is used it is not a bad plan to pass the end of the gut-link of the fly between the two strands of the joining gut and between the two halves of the knot before drawing the latter close. The drop-fly will

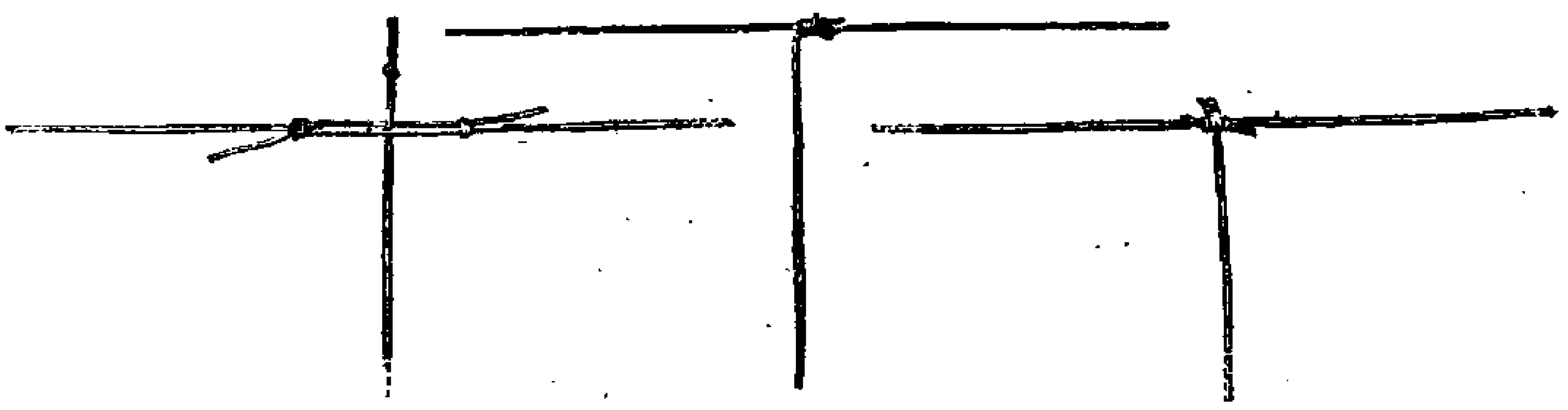


FIG. 3. FIG. 5. FIG. 4.

DROP FLY ATTACHMENTS FOR TROUT CASTING LINES.

then stand out at right angles to the casting line, a result which it is desirable to attain. A single knot tied in the link of the drop fly at the required distance outside the knot in the casting line prevents its slipping.

Another and still simpler attachment for the drop-fly, which in practice I usually adopt as being much the quickest, is, with a double half-hitch (½ of the knot in fig. 2), to knot on the drop-fly—fly uppermost—to the casting line (fig. 5). On this knot being pulled tight, and slipped down as far as the next juncture on the line, it will be found to answer exceedingly well, although the point of junction is one which will always have to be carefully looked at from time to time, as the friction of the drop-fly knot is apt to fray away the link to which it is attached. For salmon fishing I never myself use a second fly, unless by any chance the river or lake I am fishing be also tenanted by white trout, and then, of course, the fly is a comparatively small one, for which the last-named attachment, fig. 5, will answer every purpose; or slightly better, perhaps, the fly may be attached above one of the knots with a loop, as shown in fig. 6; or, stronger still, as in fig. 7,—an attachment which also gives the maximum stand-out-at-right-angle inclination to the fly, and the principle of which, as applied to casting lines with the ordinary splice, I explained in the 'Modern Practical Angler,' fig. 8.

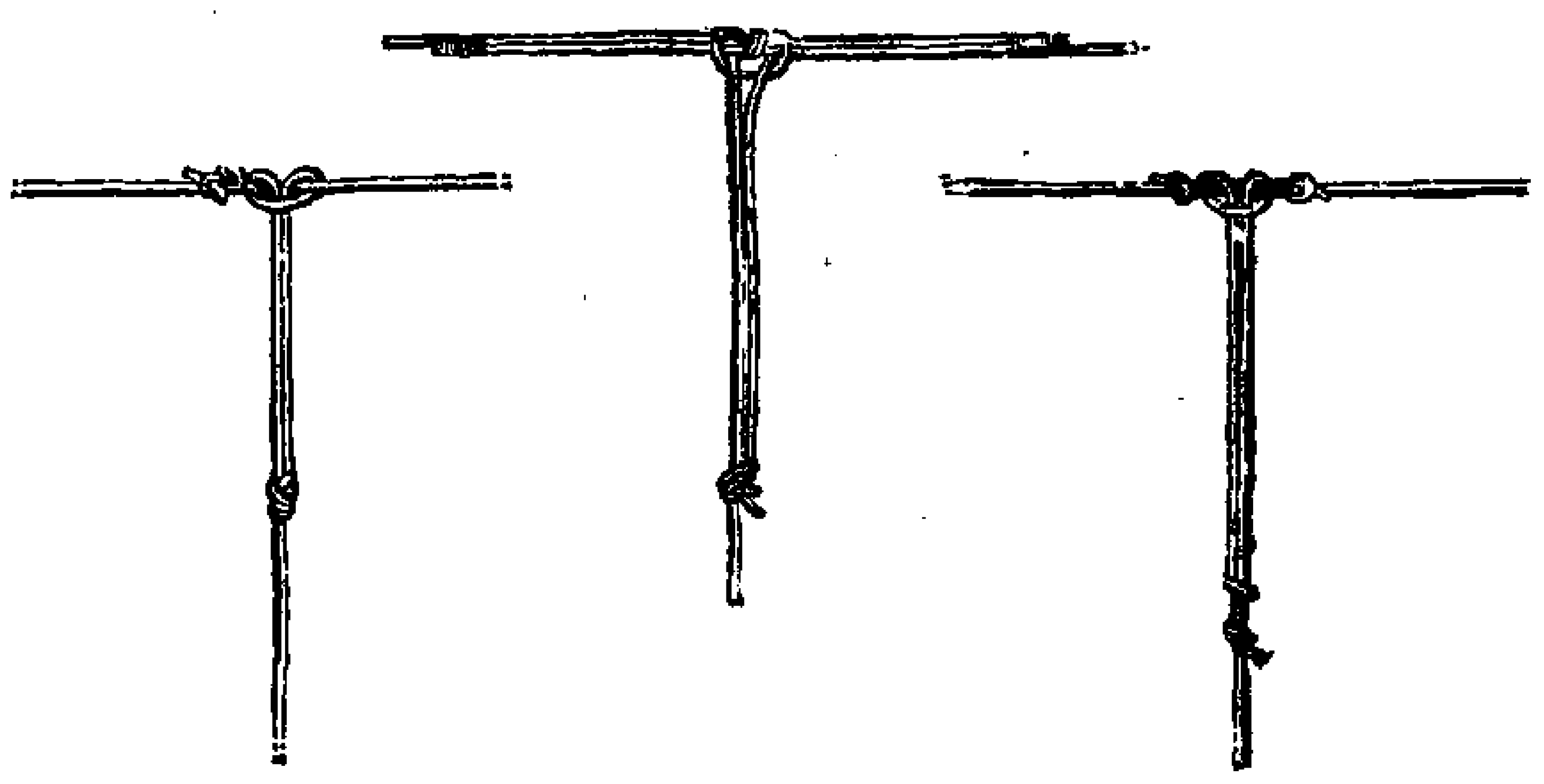


FIG. 6. FIG. 8. FIG. 7.

Nothing can well be more clumsy than the knots usually employed in joining the strands of a salmon casting line, and their inefficiency in the matter of strength is on a par with their unsightliness. In the 'Book of the Pike,' 1865, I gave diagrams and explanations of the buffer knot above referred

to, in which the objectionable features of the old method of splicing are got rid of, whilst a very great additional strength is obtained. To tie it—lay the two strands side by side and proceed in exactly the same manner as already described for tying the single fisherman's knot, *with the exception of the final drawing together of the two separate half-hitches.* Instead of

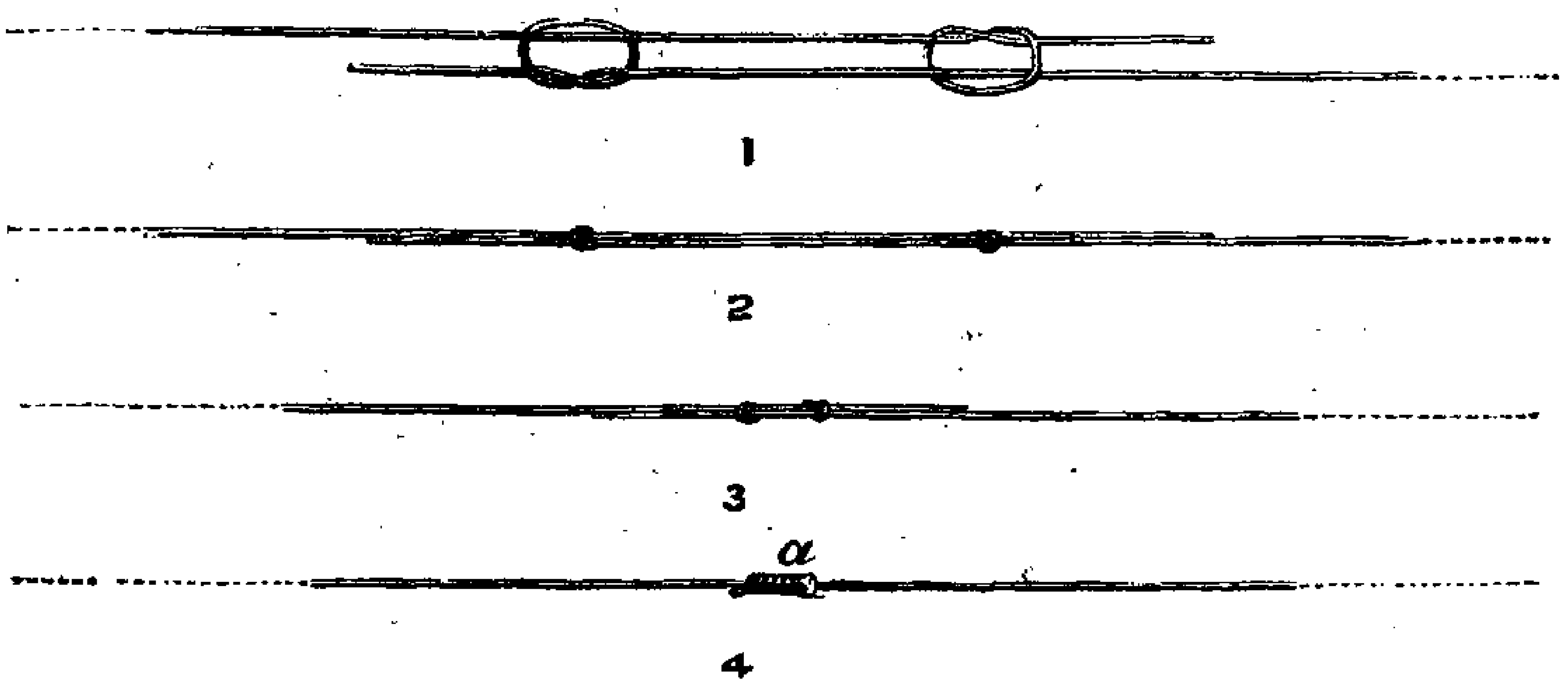


FIG. 9.—THE BUFFER KNOT FOR SALMON GUT.

drawing these two half-knots *together* and lapping down the ends on the *outside*, as was the old manner, draw the knots only to within about three-sixteenths or one-eighth of an inch of each other, as shown in the engraving at A, and lap between them with light waxed silk, or, still more artistic, with *very fine* (soaked) gut. This 'between lapping' relieves the knot itself of half its duty, and on any sudden jerk, such as striking, acts as a sort of 'buffer' to receive and distribute the strain. Tied in the old-fashioned way I find that, on applying a steady pull, a salmon gut casting line breaks *almost invariably at the knot.* Tied in the manner I suggest it will probably break at any other point in preference.

Major Traherne, whose almost unequalled experience as a salmon fisher entitles his opinion to the utmost weight, wrote as follows on the buffer knot for salmon casting lines:—

'Not long ago I fondly imagined I had invented a plan for uniting the links of a casting line without knots, and was on my

way to the *Fishing Gazette* office to unfold my secret. My friend Mr. Cholmondeley-Pennell happened to accompany me on a different business, and on my letting him know what mine was turned round and said, "My dear fellow, I am very sorry for you, but I brought that out years ago in the 'Modern Practical Angler,'" and as we were passing Farlow's shop at the time he took me in and soon convinced me that he was right, and that his principle and mine are the same, although differently carried out. Therefore, although I can lay no claim to be the inventor of the "buffer knot," I can honestly say that I had never seen or heard of it before.

'It is impossible to invent a better method of fastening gut together than that which makes the fastening the strongest instead of the weakest part of the casting line, and it is surprising to me that this method has not been adopted.'

I am glad to see that this knot *is* at last being adopted, after being some twenty years before the angling public; and though 'I say it that should not say it,' Major Traherne's frank testimony in favour of its superiority as applied to extra stout salmon casting lines (or for gut spinning traces where extra strength is required) does not go at all beyond the fact. If salmon fishers reading this chapter acquire nothing in return but the knowledge of this one apparently trifling piece of information, their time will not have been wasted.

The difference between my original knot, as above described, and the variation of it alluded to by Major Traherne is very trifling; such as it is, however, I am of opinion that as regards neatness and simplicity of manipulation my knot is distinctly preferable, and I have lately had letters from Major Traherne saying that he has come to the same conclusion.

Except for salmon, and then not when they run decidedly small, no lapping of any sort is required in any part of the casting line. The lapping that used to be applied at the tackle shops gives no additional strength whatsoever, whilst the effect is to exaggerate that which must always be a disfigurement.

For casting lines of all kinds single gut, tapered, is the only material that I ever think of employing, and I find it

quite strong enough when obtained of the best quality. Between the top of the casting line and bottom of the reel-line, however, it will generally be found convenient—always in the case of salmon lines—to interpose a couple of feet or so of some thicker medium, and for this purpose twisted tapered gut 'points,' as they are called, with the lengths neatly spliced (not knotted) together, can now be obtained. The old-fashioned 'points' made in separate lengths, and joined with a huge unsightly knot, are distinctly objectionable.

This twisted 'intermediary' materially increases, I think, the ease and nicety of the cast in the case of both trout and salmon lines. The thick end of the twisted point should be neatly lapped on to the end of the reel-line, and is most conveniently terminated by a knot, as small as may be, which is attached to the loop of the gut casting line by a sort of modified 'jam,' readily admitting of detachment. For very light trout or grayling fishing, a few strands of stout salmon gut, tapered, may be substituted for the twisted point, the casting line being knotted on by the ordinary fisherman's knot, and cut apart at the end of the day, or—where an *extra finely tapered* reel-line is employed—both gut and twist may be dispensed with.

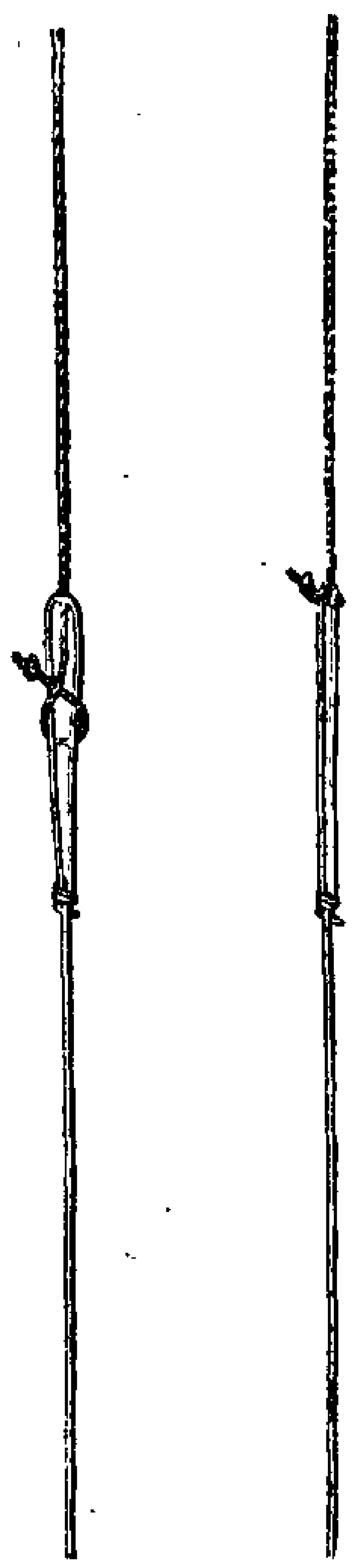


FIG. 10. ATTACHMENT BETWEEN REEL-LINE AND CASTING LINE.

Staining—All sorts of stains are recorded by different authors and adopted by different fishermen according to individual taste and fancy. I used personally to fancy what is known as the red water stain for rivers where the water took a darkish or porter-coloured tint after a fresh, and for 'white' waters a light bluish or cloud colour. I am by no means clear, however, that in the case of the fly-fisher there is any sufficient

warranty for this nicety of refinement, if, indeed, it be a refinement at all in the proper sense of the word. When we see a porter-coloured water we forget that we are looking down from above, whilst the fish we wish to catch is, in all probability, looking up from below, and that our line being 'flotant' is but a few inches below the surface of the water. The result is that when he comes up to take the fly the stratum of water interposed between the gut and the sky is really, when viewed by the human eye at any rate, almost colourless. It is the depth of water which produces the depth of colour. The same thing again applies to the clear streams which after a flood become merely slightly thickened with mud and never take the red or bog-water stain under any circumstances.

In order as far as might be to satisfy my own mind as to what practically was the best stain, I arranged an experiment in which the actual conditions of the floating line were as nearly as possible reproduced—substituting my own eye for that of the fish. A glass tank was obtained with a glass bottom, and I found that with about three inches of water in it the difference between water stained with tea or coffee to about the same extent as the red water of a river, or slightly clouded to represent the waters of a chalk stream, was, for practical purposes, *nil*, and, after trying various experiments, the general conclusion appeared to be that the stain which was most like the colour of the sky was the least visible ; also, that the very lightest stain was better than a dark one, and that in the case of perfectly sound clear gut no stain at all seemed practically to be required, as the negative colour, or rather approximate colourlessness, of the gut harmonised, on the whole, very well with most kinds of sky tint.

Probably a light ink-and-water, or 'slate,' stain is as good as any, taking one day with another. To produce it, mix boiling water and black ink, and soak the gut in it—rinsing it thoroughly when it has attained the desired colour. This, indeed, is a precaution that should never be omitted in staining gut, which is otherwise apt to lose its transparency. When too

dark a stain has been given it may readily be reduced in intensity by soaking the gut in clean boiling water.

For the common 'red water stain,' an infusion of tea leaves, boiled down until a teacupful of black tea in a quart of water becomes a pint, gives a nice clean transparent tint; or coffee that has been previously charred in a frying-pan and ground, will answer instead of tea.

When the gut is not entirely round and clear, or, in other words, is 'stringy,' it is very apt to have a sort of gloss, and, when the sun is shining upon it, glittering effect in the water, which is highly undesirable. In such a case I have tried, with apparently good effects, slightly rubbing down the gut with dryish cobbler's wax. This also has the effect of making the gut flotant—a hint for the 'dry-fly.'

I once at Loch Leven met with the friend of a fly-fisher who never used to stain gut, but took off the glitter by simply pulling it once through a piece of fine emery paper. . . . This is drawn gut with the 'chill off.'

For dressing flies, where gut is used in the bodies, Judson's aniline dyes, kept by most chemists, will produce any sort of stain required. The directions are given on the bottles, but I recommend the use of only one-half the proportion of water. Some of the stains produced by the aniline dyes, however, destroy the texture of the gut.

Hair, which I cannot recommend for any sort of fly-fishing, and which when used should be taken from the tail of a stallion, is seldom stained, being generally preferred of the natural brownish tint. If, however, it is required to stain it for the purpose of fly-tying or otherwise, the animal greasiness must be first removed by slightly boiling the hair in a 'mordant' obtained from an ounce of alum dissolved in a pint of water. This is also a good preparatory mordant for feathers before they are dyed.

The length for the casting line itself, shown by general experience to be the most convenient, is about three yards. In the case of salmon fishing with a second fly, or lake trout

fishing with three flies and a double-handed rod, an extra foot —making, say, ten feet in all—is sometimes added, but it may be safely said that fifty 3-yard casting lines are made for one over that length. Where eyed flies are used, which have of course no separate link of gut belonging to them, the casting line becomes practically a link shorter.

I rarely myself use more than two flies in trout or any other fishing—except occasionally when experimenting on the best flies for a new water—and therefore three yards is an ample allowance. Not that, as 'Box and Cox' expresses it, I have any 'violent animosity or rooted antipathy' to three flies, but that for ordinary purposes I find two preferable. Two flies can be cast better than three; two flies can be 'worked' better than three; two flies are not so liable to entanglements as three; and when they do get 'mixed' the tangle is less inextricable. By 'working better,' what I mean is that whilst the upper dropper, which, a second or two after the cast, hangs—or should hang—clear of the line, and, barring the fly, nearly clear of the water also,—and whilst the tail fly is of course always swimming clear, the lower or second dropper, by the action of drawing in the flies, gets of necessity more or less muddled up with the casting line (which the nose of a rising fish is very likely to strike), and cannot be worked, like the top dropper, cross-line or 'otter' fashion, dribbling along, that is, amongst the ripples.

The argument applies also to river fishing, though perhaps in a somewhat less degree inasmuch as the action of a current —often nearly smooth—does not lend itself so readily to the artistic working of the dropper as the streamless and generally wind-wrinkled surface of a lake.

All this, however, is fairly a question of practice as well as theory, and, as I say, many excellent fly-fishers—perhaps a majority—prefer three flies to two. Their contention is that it gives a greater chance of the flies being seen, and a greater choice to the fish when he does see them.

Passing from the gut to the reel, or running line, I find so

wide a field open before me that I despair of being able to do justice to the numberless different descriptions of lines, dressed and undressed, silk, hemp, hair, and what not, which compete for the fly-fisher's favour.

When I served my apprenticeship to the craft almost everybody used a line composed of a mixture of silk and hair, and this has still some votaries left, amongst whom, however, I am decidedly not one. It had, in fact, only one good quality, lightness; perhaps I should say half a good quality, because the lightness which is of advantage in the water is a great disadvantage in casting against the wind. For the rest, this silk-and-hair line possesses pretty nearly every drawback that can well be combined. The moment it is not tightly stretched, in other words, that it has a chance of kinking, or crinkling up, it promptly does so; the protuberant points of hair impart a disinclination, almost amounting sometimes to a positive refusal, to allow itself to pass through the rod-rings, whilst, even under the most careful treatment, it gets rotten, or so much weakened as to be untrustworthy, after the shortest term of service. So much for 'silk and hair.'

Hair by itself may be dismissed in a very few words. As contrasted with the silk mixture, it possesses its virtues in a greater and its faults in a minor degree. It is still more flotant in the water, where also it is much less visible, and it never gets rotten. But as a set-off the difficulty of casting against the wind and the friction in the rod-rings are, of course, exaggerated. On the whole, although I have used reel-lines entirely made of brown horsehair for trout fishing in calm and bright weather with considerable satisfaction, I decidedly prefer a dressed—i.e. waterproofed—line, whether silk or hemp, which is suitable for windy as well as calm weather, and which with proper care will last quite long enough for all practical purposes.

For salmon fishing, of course, lines made of hair or of silk and hair, would be put out of court on one ground alone, namely, a want of sufficient strength.

With regard to the question of hemp or silk, I must say

that when the 'Manchester Twine Cotton Spinning Company' first started they sent me some lines, both dressed and undressed, which were exceedingly perfect, and which I believe, after fourteen years' occasional service, to be still as strong as ever—in fact, so strong that on trying one of them just now with both hands a friend of mine failed to break it. This line, however, is what is termed 'cable-laid'—twisted, that is, in the same manner as a ship's cable—the principle of which is that whilst the cable itself is twisted from right to left, the separate ropes of which it is composed are twisted from left to right. The result of this is that the two twists counteract each other in their mutual inclination to kink, and when wetted, the cable, instead of swelling, hardens and contracts. Of the plaited hemp lines issued by the same Company I have nothing good to say, neither did any of the dressings of those that I have seen properly effect their object, and if they did so temporarily, my experience is that they would not stand.

In the case of the particular line to which I refer, no semblance of dressing of any sort now remains, or did remain after the first few months, or, perhaps, weeks, of real 'service in the field,' on any part of the line which had come into actual use. The strength, however, was and is, I think, bulk for bulk, unequalled by any lines that I have met with made of silk. The latter, however, possess the great advantage of taking the dressing, or waterproofing, perfectly, and admitting afterwards of a smoothness and polish which facilitate very greatly the running out and the reeling in of the line.

These dressed silk lines also, if not absolutely so strong as those made of hemp (and they have improved of late years), can be made quite strong enough for all practical purposes. I say advisedly 'can be made,' because I have found the most unexpected differences in the strength of different so-called silk lines of the same thickness, and where they have been said to be of the same manufacture. The best rough and ready method of testing is to take a foot or two of the line between the hands

and ascertain, by breaking or trying to break it, what is its actual strength.

It appears, then, that on a computation of advantages and disadvantages our support should be given to dressed silk lines for fly-fishing ; and as these are made of every thickness, from that of an ordinary piece of stout sewing cotton almost to that of a bell rope, everyone can, without difficulty, suit his particular objects and tastes. Dressed silk has in rough weather a 'driving' power which cannot be obtained with any undressed material, and nothing but silk appears to be capable of taking the dressing properly.[1]

Then comes the question : Shall the dressed silk line be 'level'—that is, of equal substance throughout—or 'tapered,' which means in ordinary parlance, getting finer towards the end at which the casting line is to be attached? The latter is sometimes what is called 'double tapered,' that is, the line is tapered at both ends—or it may be only a 'single taper,' when, of course, the taper is made at one end only. As between level and tapered lines, each has its advantages and its disadvantages, but, on the whole, I think nine fly-fishers out of ten prefer, in practice, a line more or less tapered towards the casting end.

So far as the actual casting is concerned, apart from 'fine fishing,' these details are of little importance on quiet days, but in stormy weather, when the wind is blowing half a gale, perhaps right in the fly-fisher's teeth, the case is radically altered, and the man whose line is properly tapered and balanced and in weight exactly suited to his rod will be able to go on casting with comparative efficiency, while his neighbour, less perfectly equipped, will find his flies blown back in his face every other cast.

The importance, to the salmon fisher especially, of a line

[1] The art of dressing a line, whether for trolling or fly-fishing, is in itself a speciality, and one which few amateurs will probably find it worth taking the trouble to practise for themselves, but in case they should desire to become their own line dressers, they are advised to try the receipt given by Major Traherne, in his article on fishing for salmon with the fly, as the result of his experience on the best mode of dressing silk lines for fly-fishing.

which will cut its way through a fierce March squall has been so well recognised that in order to give greater 'cutting' power line-makers have even gone to the extent of manufacturing reel-lines with wire centres. My friend Mr. Senior now informs me that some he tried, made by Foster, of Ashbourne, answered exceedingly well. I have used them myself also, and in squally weather they certainly possess great 'cutting' power against or across the wind.

The salmon line that seems to command the greatest number of suffrages amongst *connoisseurs* is what is known as the 'swelled line.' This line is gradually tapered thicker from the end up to a point which it is calculated will generally come near about the top of the rod in making a cast. Thus the average length of the taper from the finest to the thickest part is usually, for a salmon line, 15 to 20 yards, then tapering off backwards until it reaches its finest point again at another 15 or 20 yards—i.e. 30 or 40 yards in all, where it is attached to the 'back'-line. This is the line recommended by Major Traherne (see article on salmon fishing).

I find I get capital casting with the swelled line, both as applied to trout and salmon fishing—in the former case the swell or thickest point should be reached proportionally quicker, say, for a single-handed rod in about 9 or 10 yards from the end. The quantity of line, clear of the rod-point, that can be continuously used with the maximum of effect in lake trout fishing with a ten-foot rod is, I find, about 18 or 20 feet—or nearly twice the length of the rod—*plus* the casting line : i.e. 9 or 10 yards altogether. Deducting 3 yards for the casting line, this would leave 6 or 7 yards as the point in the reel-line at which, for ordinary lake work, the thickest point of the taper or 'swell' should be reached ; but as longer casts are often required, and as, moreover, the same line will probably do duty for river fishing as well, probably from 8 to 10 yards of taper will be found the most convenient length. For a double-handed trout rod, something between the proportions of a salmon line and those last-named are applicable. If a level (untapered) line

be used, the interjection of 2 or 3 feet of twisted gut point—an advantage in almost all cases—will be found highly desirable, breaking as it does the otherwise abrupt transition from reel-line to gut.

Dry-fly fishers, who generally use stiffer rods than common, have canons of their own on these questions, and the latest science of reel-lines for the floating fly will be found in Mr. F. M. Halford's able article.

Let me, in quitting the subject, emphasise one parting caution : The thickness (and swell) of the line must absolutely be proportioned to the capacities of the rod if the most artistic results are to be obtained. A heavy line demands a stiff rod (and top), and *vice versâ*, and a light whippy rod with a fine top a line of corresponding lightness. A transposition of these conditions—either way—will produce failure.

One other hint—if a reel-line is not absolutely *smooth*, reject it unhesitatingly, no matter what its other qualifications may be. I know of lines admirably strong, capitally tapered, long wearing—'conscientious' lines in fact in every way—but of which I would have none at any price. With such, every time you want to lengthen or shorten your cast there is friction on the rod-rings, and an impediment more or less to free passage ; in giving line to a fish ditto (often the cause of losing it) ; whilst both in casting through the air and lifting out of the water, such a line entails at every cast of every day, from its 'cradle to its grave,' a certain small comparative disability, which to willingly subject oneself to is stupid, because wholly unnecessary.

This naturally applies to any kind of line, dressed or undressed.

REELS AND REEL FASTENINGS.

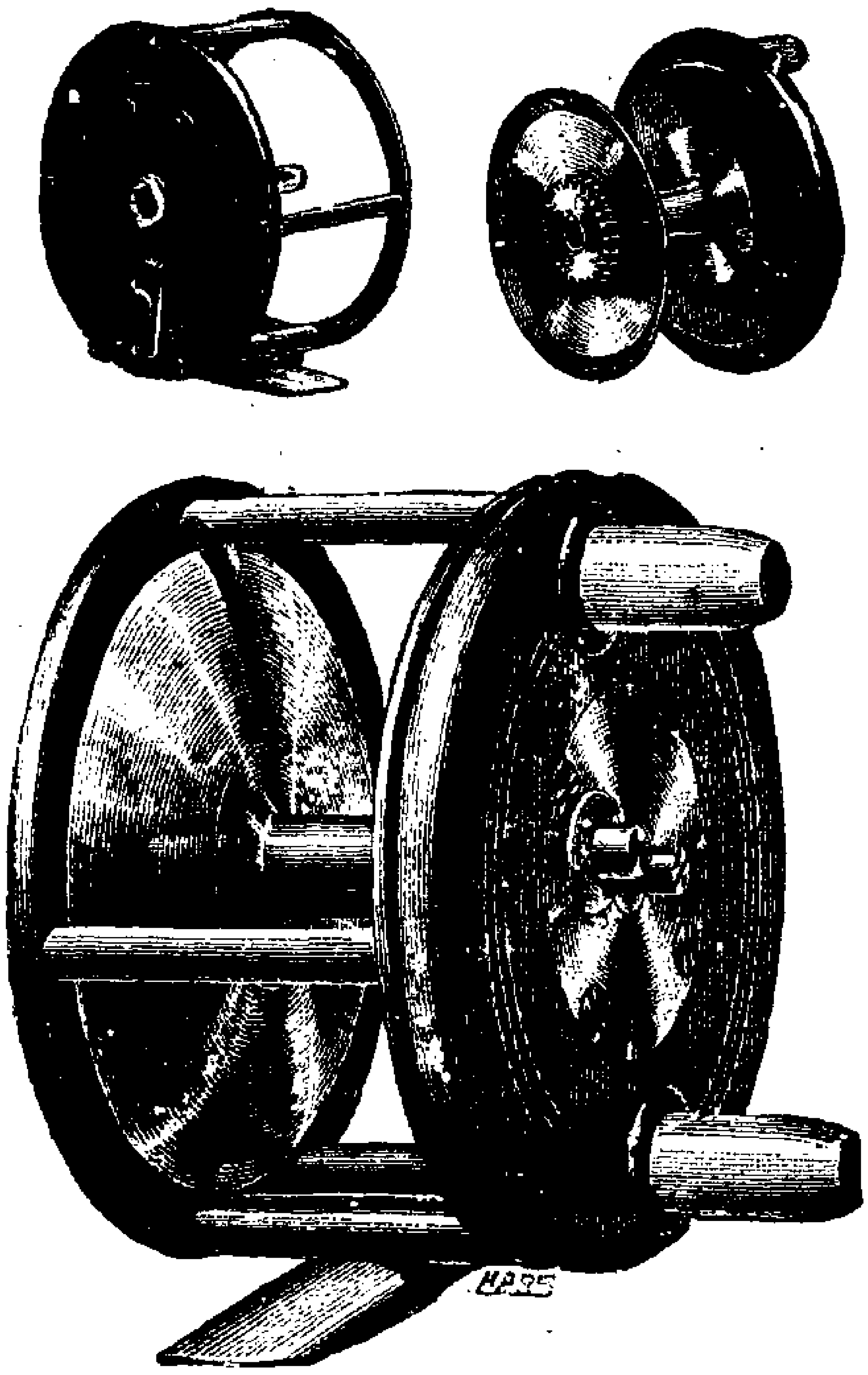
The Fisheries Exhibition of 1883 was prolific in new reels, many of which, it must be confessed, were not only highly ingenious as inventions, but really excellent in their adaptation to different sorts of fishing. Indeed, if reels have not in the matter of 'improvement' quite kept pace with the improvements in rods, they are yet prodigiously in advance of the unmechanical windlasses with which our forbears, in the not very distant past, were content to reel in the victims of their prowess. But I will not slay the slain twice over, or evoke, merely for the purpose of exorcising them, the ghosts of 'Pirns,' 'winch-winders,' 'multipliers' (*horresco referens!*) and other similar abominations, which if not actually as extinct as the dodo, soon will be. . . .

Of modernised improved reels or winches that which presents, perhaps, the greatest actual novelty is Slater's 'Combination Reel,' so called because uniting the qualifications of a Nottingham reel and an ordinary plain or check reel. This it does without, so far as I can judge, diminishing the efficiency of either. Further—speaking with due diffidence of a speciality of fishing which I have had very little opportunity, or perhaps taste, for acquiring—it would appear to be vastly superior to the old-fashioned open Nottingham reel, in that, being confined to the barrel by transverse bars, the line cannot be perpetually 'winding off'—or I should say 'twisting off'—the reel when not wanted, and hitching its loose coils round the reel itself and everything else in its vicinity.

Nottingham fishing apart, however, the reel is of very general applicability, and being exceptionally light, as well as simple in construction, presents advantages in many directions.

For all kinds of fishing, for example, in which the bait is commonly, or occasionally 'cast from the reel,' it is excellent. So also it is in some branches of fly-fishing, such as (to mention one in which I have used it with much satisfaction) in lake

fishing with a double-handed rod. Indeed, even for light salmon fishing, I have both used it myself and seen it used successfully by others. No doubt the speciality of the reel is for pike spinning, in which connection it is figured and described in Vol. II., but for the convenience of trout and salmon fishers the illustration is here repeated.



'PERFECT COMBINATION REEL.'

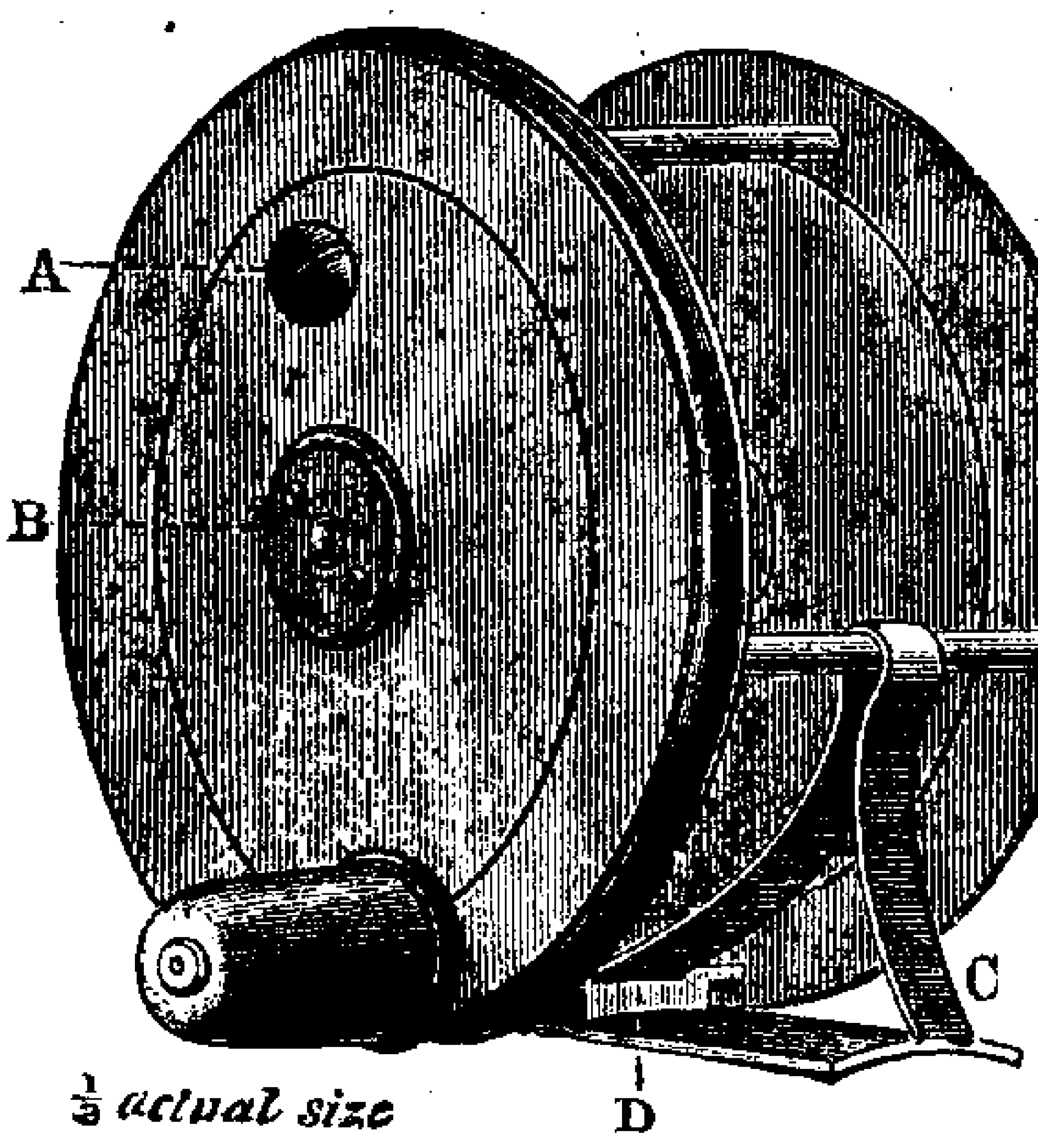
In order fully to adapt the Combination Reel to the requirements of the ordinary fly- and float-fisher, as well as to the troller, the winder and axle, instead of being entirely of wood, as formerly —necessitating, of course, a large diameter—are now also made, in the form shown in the woodcuts, of wood and metal combined, by which the diameter of the axle is reduced, and the reel so far in all respects assimilated to the ordinary patterns of brass and bronze,— its speciality in regard to the Nottingham style of casting being of

course retained. The insides of the barrel plates on both sides are, in this later pattern, composed almost wholly of metal, rotating freely on a fixed steel pivot or centre-pin. Attached to the non-revolving (left-hand) plate [illegible] brass frame or cage supporting the horizontal bars, between which, of course, as in ordinary reels, the line passes, whilst this immovable framework is 'recessed' into a groove in the revolving barrel. The object of the revolution of the whole right-hand side-plate—made exteriorly of wood—is to enable a 'drag' to be placed upon the running-out of the line, without which, as a means of regulating the length and direction of the cast, casting from the reel in the Nottingham style would be practically impossible. The two portions of the reel readily come apart when it is desired to oil or clean them; and it was when in this separated condition that the upper figures in the cut were taken, the lower figure showing the reel when put together. By shifting with the finger a button or 'catch' the action can be changed to a 'check.'

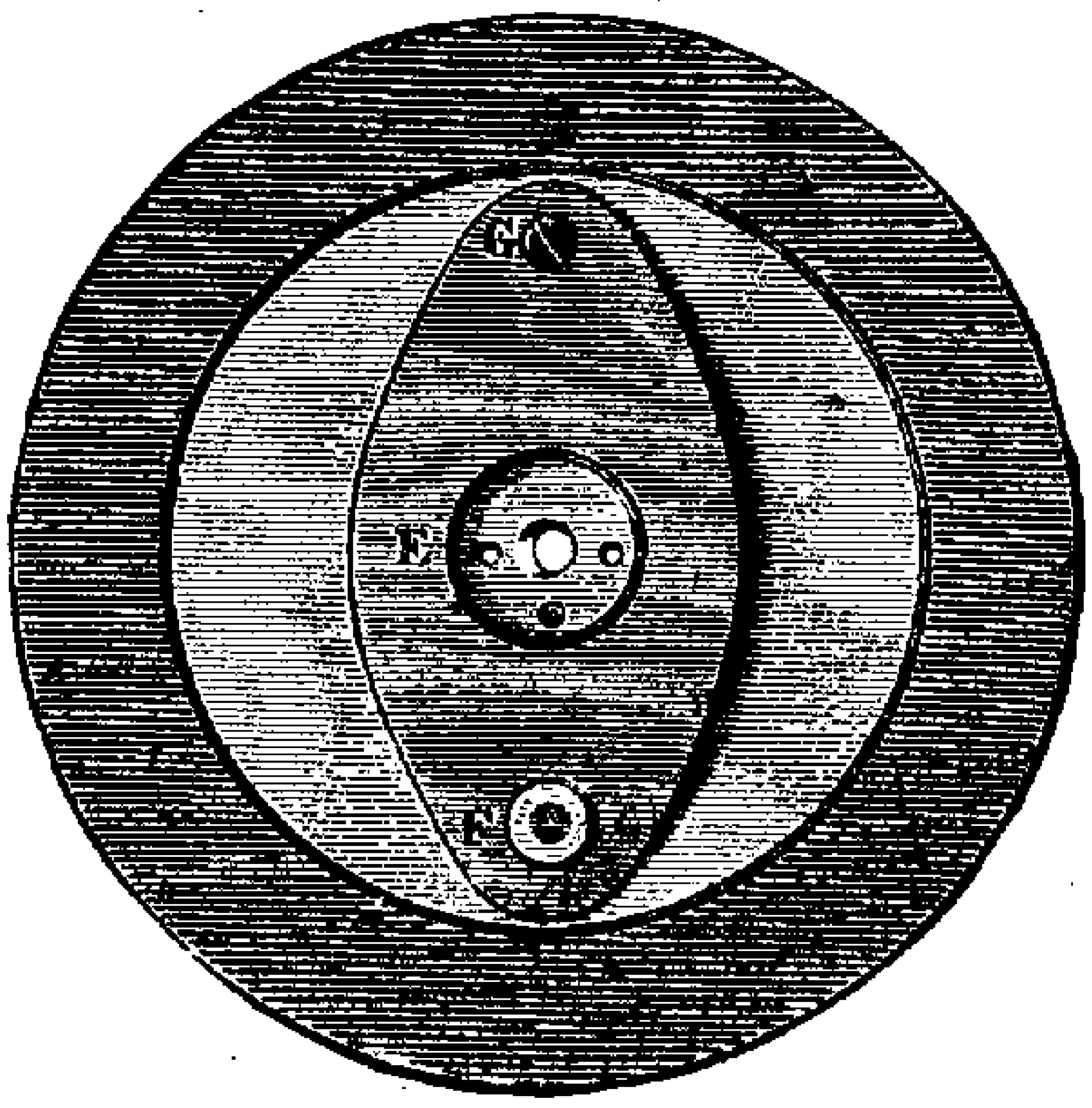
The diameter of the reel from which the engraving was made is 2½ inches; inside width between barrel plates, 1¼ inch; weight, 6 oz. This size and pattern is suited for any kind of fishing, but for lake trout fishing I prefer a 4-inch reel of the original wooden pattern, the increased diameter of the axle, unaccompanied by any increase of weight, giving a more rapid and powerful winding-in power. For light salmon fishing a 4½-inch Slater's wooden reel will be found about the most convenient size. After continuous wetting, these reels should be taken apart and carefully dried and *oiled all over*, otherwise they are apt to swell and 'stick.'

Another comparatively recent introduction is Mr. Heaton's 'Strike from the Winch' Reel, which has its advocates for trout and even for salmon fishing; though, I confess, I should not be inclined to put any great faith in it—or rather in the principle it embodies—as applied to the latter purpose. The object of the reel is primarily to soften or relieve the 'jar' of the stroke by keeping the hand clear of the line and allowing the reel (the resistance of which can be made weaker or stronger) to do the work instead. It has no 'check,' in the

technical sense, of any sort, and the graduated pressure is obtained by the application of a screw working over, and against, the end of the axle. It is important that the end of this regulator should be kept carefully oiled.



'LEVER REEL,' FIG. 1.



'LEVER REEL,' FIG. 2.

For Salmon reels proper we have, if not an *embarras de choix*, at least several excellent varieties to select from.

First there is Farlow's 'Lever Reel'—a solid brass

(bronzed) reel, shown in two views in the engravings. It is made in all sizes, but it is distinctly as a salmon reel that it finds its most natural place.

Its speciality is the mechanism, explained by the lower diagram, in which the lozenge-shaped piece represents a convex spring plate, which by means of a screw-nut (shown in the upper figure) can be loosened or tightened at pleasure, so as to offer exactly the resistance to the running out of the line that may be desired. This takes the place of the ordinary check, which is, however, attached to a second variety of the reel for those who may prefer it. In this latter model the regulator-spring is transferred to the left-hand, or opposite, plate, and replaced on the right-hand plate by the check machinery.

There is also a little supplementary plate, which will be noticed covering the end of the axis, for lubricating purposes.

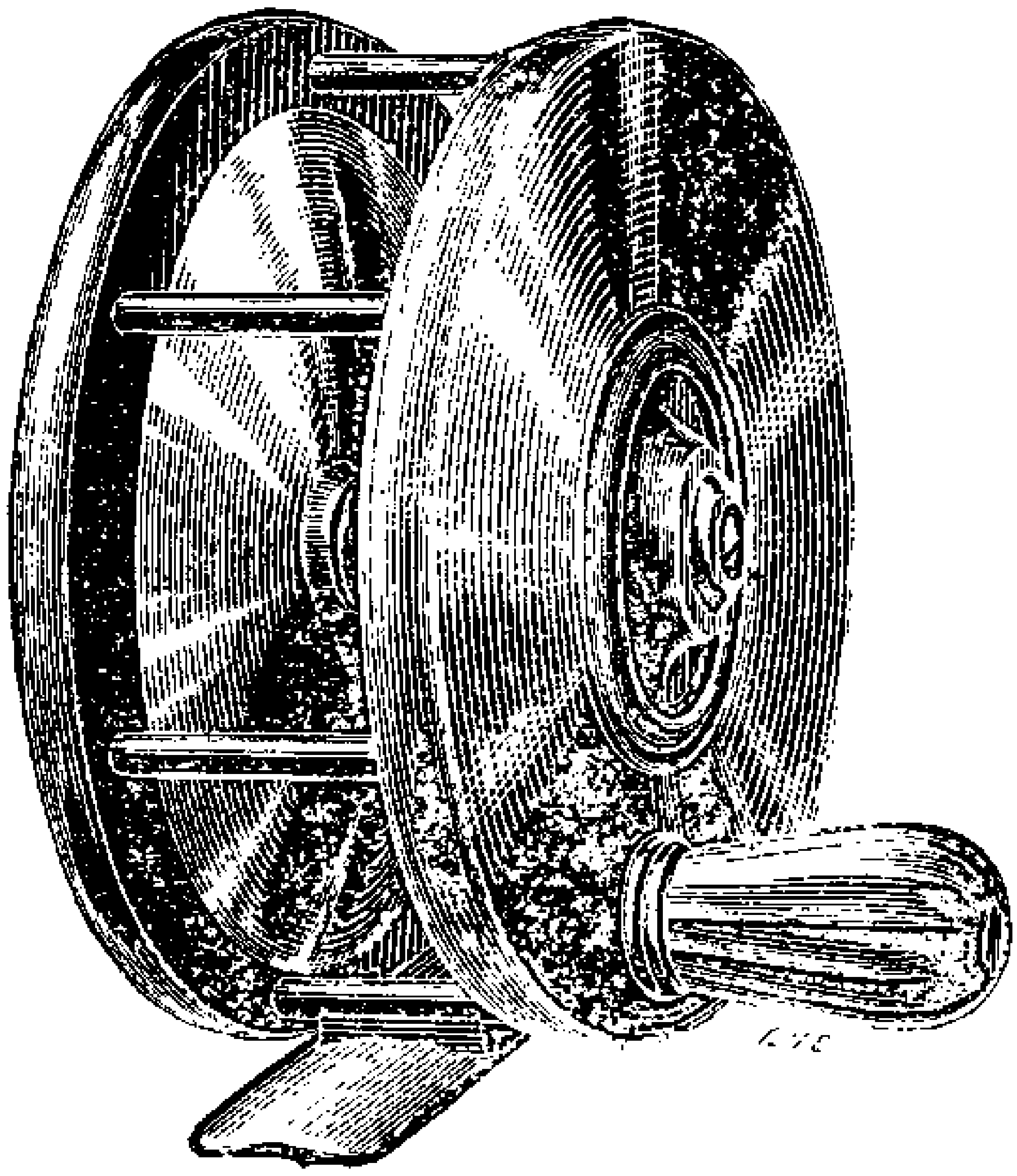
Chevalier and Bowness manufacture a very similar reel, in which the 'pressure nut' is turned on and off by the fingers, instead of by a knife-blade or screwdriver.

These are both strong and thoroughly serviceable reels; and for salmon fishing, where it seems—or I should perhaps rather say, seemed till recently—to be the general theory—or, at any rate, practice—that weight is subsidiary to strength and durability, can be safely relied on. A 'lever' reel of 4½ inches, with a proper complement of line, weighs 2 lbs. 1 oz.

Another capital reel, which I have found excellent for all sorts of *boat work*, is Malloch's 'Sun and Planet' Reel. This is a check reel, and its peculiarity is that unless, and until, the handle is taken hold of, the line runs out without any movement of the side plate (or, of course, of the handle), so that, when trailing, for instance, the rod can safely be left with the reel resting on the bottom of the boat, and in case of a 'run' there is no danger of a contact between the reel-handle and boat-gear causing one of those sudden checks on the line which are apt to produce inopportune results.

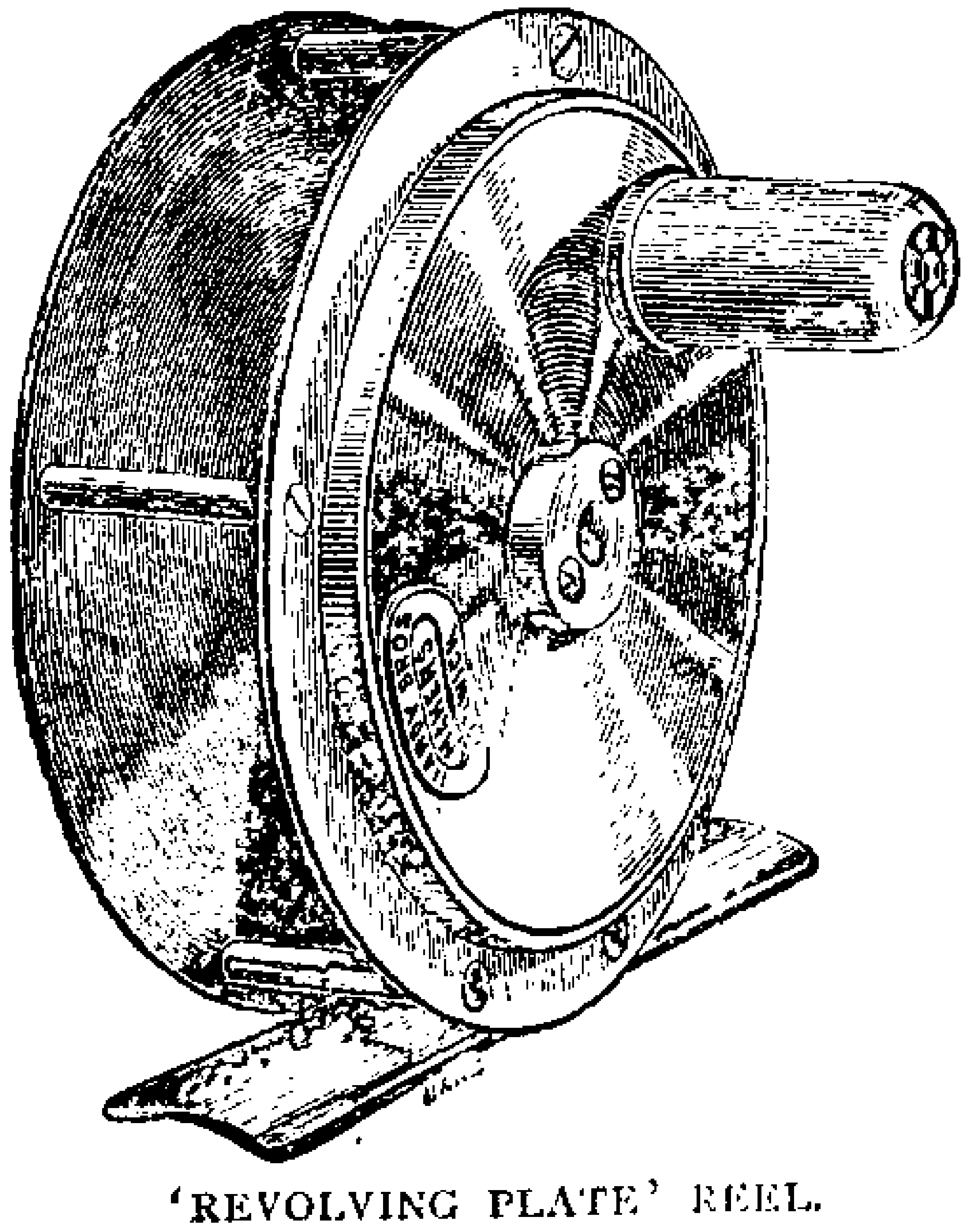
In the reel which I have of this pattern the right-hand plate is made of some white metal, lightly bronzed, or rather

'greyed,' and the left-hand plate of ebonite. The ebonite plate, in my opinion, renders it less suitable for bank fishing, where a knock on a stone is very likely to happen, entailing very probably a fracture of the ebonite.



'SUN AND PLANET' REEL.

To those who desire light reels made entirely of metal, where very rough work is not to be expected, Hardy Brothers' 'Revolving Plate Reel' will commend itself.



'REVOLVING PLATE' REEL.

'The object,' say the inventors, 'aimed at in introducing these reels was lightness combined with strength. The plates are made of fine German silver, hammered very hard. The reel is much contracted, and thus gives great winding power. . . . It is fully one-third lighter than the ordinary brass and other reels.'

Diameter	Width between barrels	Weight
$4\frac{1}{2}$ inch	$1\frac{7}{16}$ inch	19 oz.
$4\frac{1}{4}$ "	$1\frac{7}{16}$ "	18 "
4 "	$1\frac{7}{16}$ "	$16\frac{1}{2}$ "

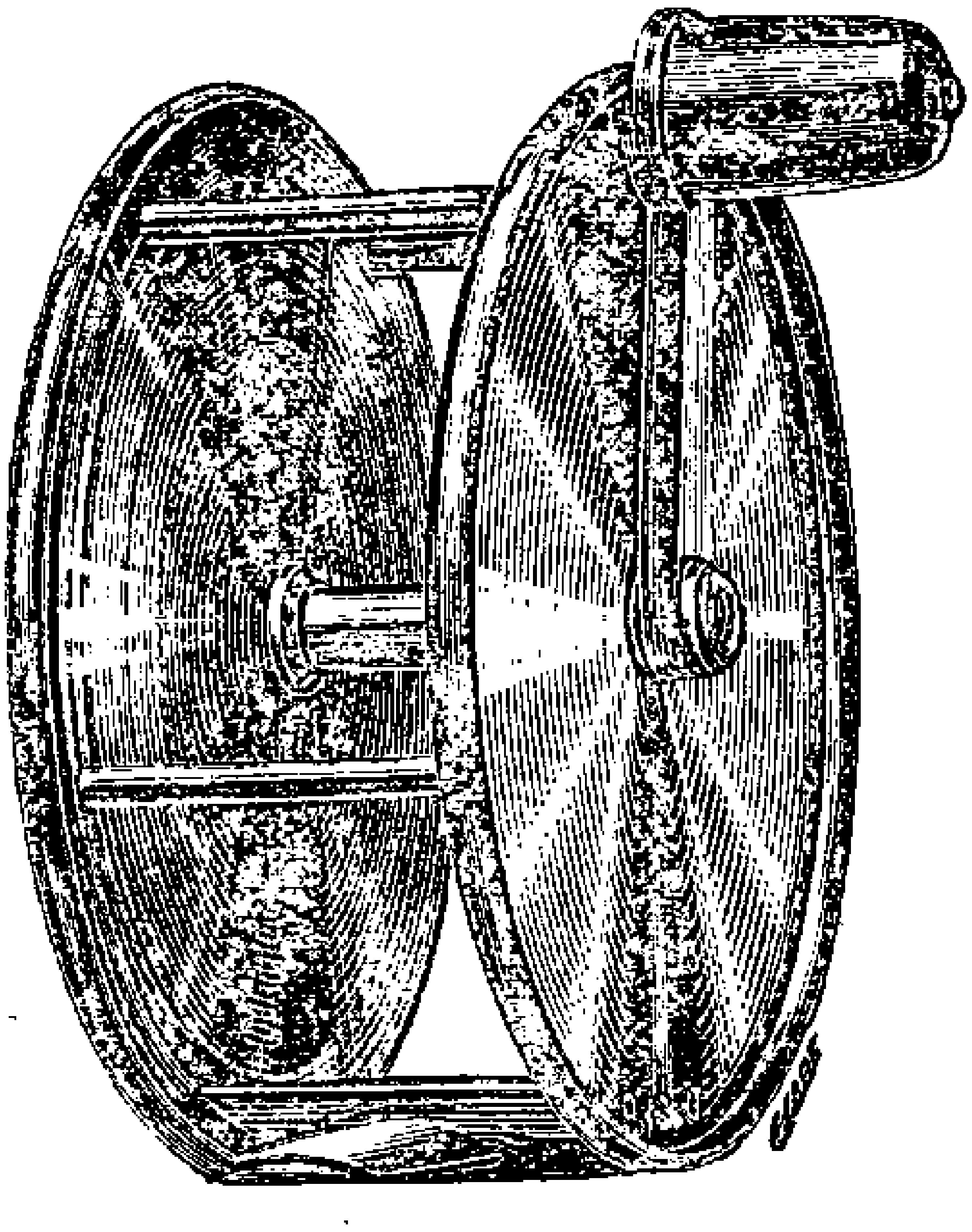
The $4\frac{1}{4}$-inch reel will take comfortably 100 yards of fine hemp backing and forty yards of medium dressed silk taper suited for a salmon rod up to sixteen feet in length.

The lightest reel in the world is probably that made entirely of aluminium. An aluminium reel $2\frac{1}{2}$ inches in diameter weighs under 3 oz., but the price is alarming—at least 1*l.* per oz.

This, of course, is carrying things to an extreme; but clearly the question of weight in reels is of the utmost importance if the rod is to be properly balanced—which is only another word for saying, 'if the maximum and perfection of work are to be got out of it.' There can be no question, however, that, whether with the idea of 'balancing' or otherwise, the weight of reels ordinarily used, especially in salmon fishing, is greatly overdone. The reel has always to be supported 'at arm's length,' so to say, where every ounce tells its tale during a day's fishing. Another vitally important point in a salmon reel for genuine hard work is the winding-in leverage, as every salmon fisher knows who has had the experience of 'reeling up'—or trying to reel up—half a dozen heavy fish in as many half hours. Again, the ideal salmon reel must be strong enough to run no risk from chance collisions with rocks or other 'jeopardy of war'; and, further, the check machinery should be as simple as possible, and readily accessible in case of accidents or for purposes of lubrication. A narrow barrel or winder and (of course) a corresponding narrow groove are

desiderata which, happily, it is now hardly necessary to insist upon. In salmon reels, however (though hardly in trout reels), this last point may be overdone, having regard to the convenience in carrying line in the most compact form.

As I could not find any salmon reel completely fulfilling these several conditions, I set about constructing one, and in doing so unhesitatingly pressed into my service the best points I could find in any existing reels, well-known or otherwise. The outcome is shown in the reel figured below, in which I



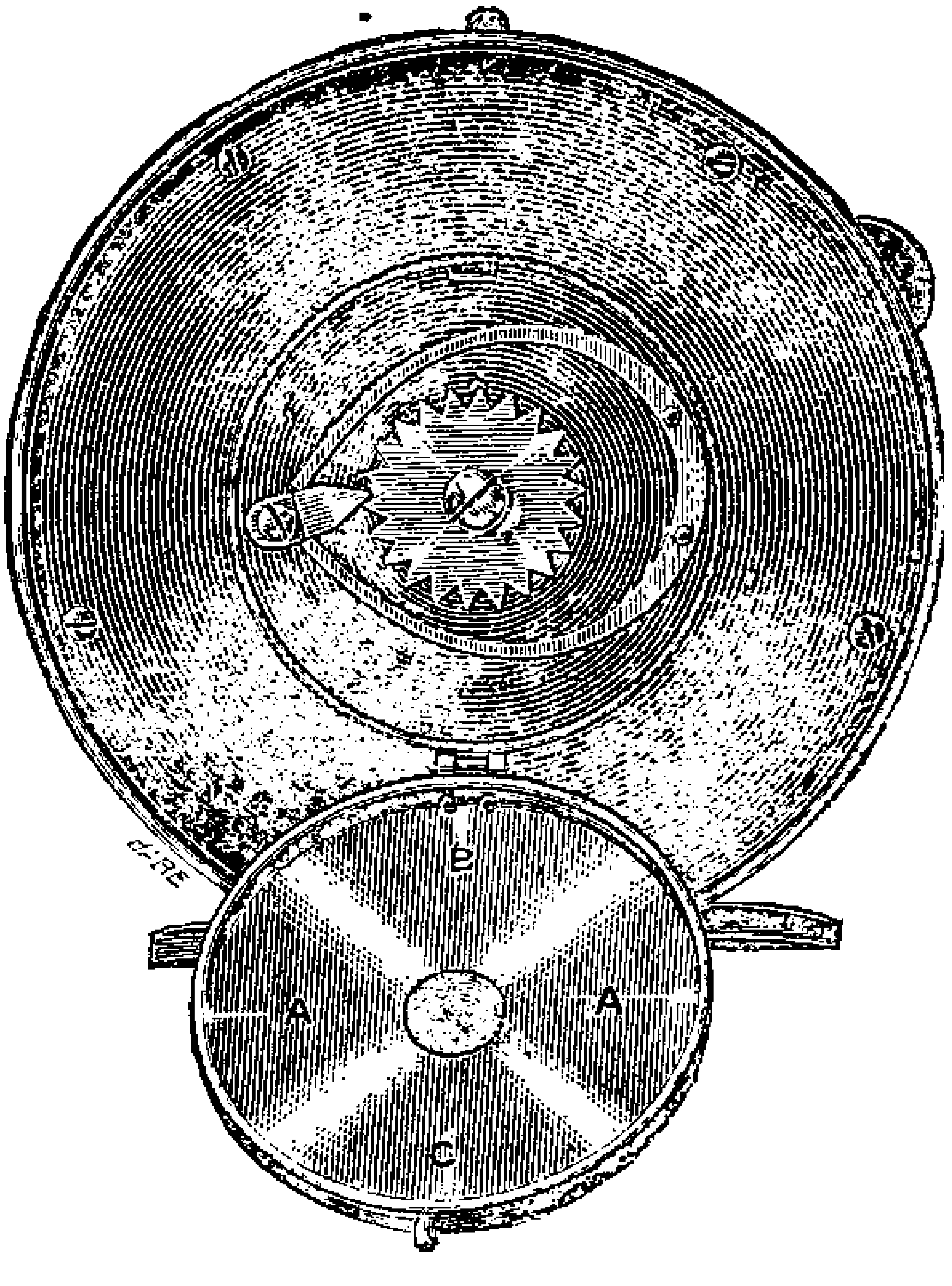
PENNELL REEL, FIG. I.

believe it will be seen that the desiderated requirements are combined. . . . But let me, in the first place, acknowledge my indebtedness to the other inventors of whose several systems I have taken advantage.

The form of the side plates of my reel, with a rim all in one solid piece of metal, is due to General Sir Daniel Lysons, G.C.B. This rim not only enables the exterior end of the handle to be 'guarded,' or counter-sunk, so as both to protect it and prevent the line hitching round it, but at the same time makes it practicable to dispense altogether with the second or

exterior side plate. Hence (point first) *a considerable diminution in the weight of the reel, with increased rather than diminished strength.*

The handle of the Lysons reel terminates *inside* the rim, so that the leverage is only about the same as that of a handle attached in the ordinary way to a revolving side plate; and to gain the maximum of possible leverage (point two) I have adopted in a modified form the handle which is said to be the invention of Colonel Latour[1]—or which, at any rate, is known as 'Colonel Latour's handle.' This, in a 4½-inch reel,



PENNELL REEL, FIG. 2.
Outside of left-hand plate, showing check mechanism and lid.

gives an increased leverage, or winding-in power, of half an inch in actual measurement, or, *mechanically speaking, some-*

[1] A variation of this handle, with an extension of it right across the reel from side to side, is known as 'Bright's' handle, but it offers no additional advantages and adds materially to the weight.

where about doubles it (?). The doubled leverage will tell, from the first putting together of the rod until the gaffing of the last fish of the day gives the wearied muscles of the right arm and back a not unwelcome respite.

The last point is the *check mechanism*, shown in drawing, fig. 2, which ought to be simple, and at the same time easily accessible—accessible, that is, without any 'taking to pieces' of the reel. In my 'combined reel' the check machinery is merely covered by a hinged lid (A, B, C), sufficiently close-fitting to be practically water-tight, while admitting of being opened at once by giving the catch, C, a turn with the point of a knife-blade.

The first time I recollect noticing a similar form of check-cover was on a reel made, I believe, by Bernard & Son, for my friend Mr. F. T. Corrance. This was a light reel with one side ebonite, and intended principally for boat work in Norway.

It will thus be seen that for whatever merits the combined reel may possess I can personally claim very little credit—but if the outcome of the combination produces any approach to an 'ideal salmon reel,' it matters little to fishermen from whose hands they receive it.

The weight of this reel, $4\frac{1}{2}$ inches, is 1 lb. 6 oz.; and that of a 'best London-made reel' of the same diameter, of one or other of the similar patterns already noticed, somewhere about 1 lb. 13 oz.—or 7 oz. more.

The reel is registered and manufactured by Messrs. Farlow.

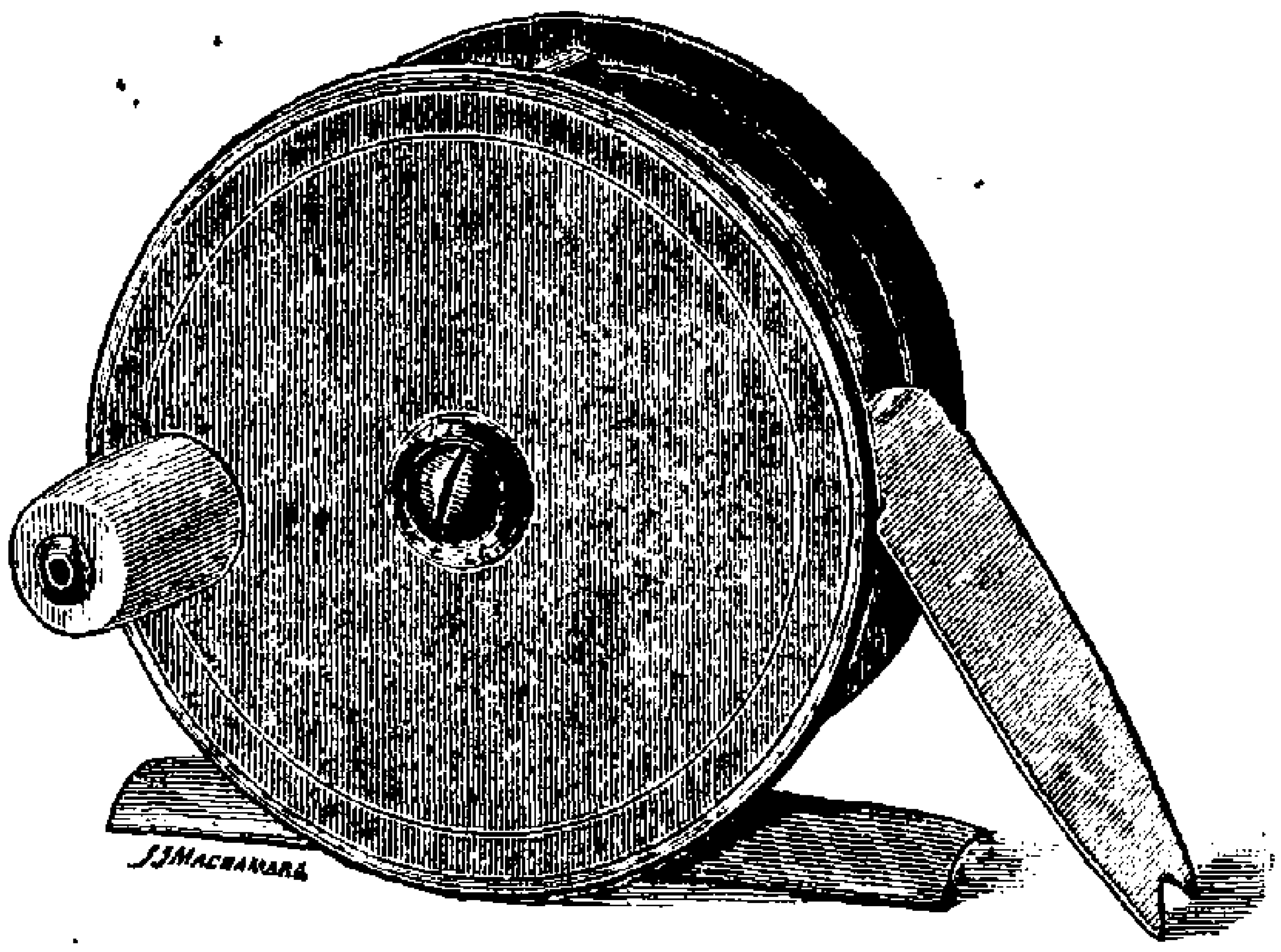
Messrs. Hardy's reel is very much lighter than the 'London-made' reel, and not quite so light as my pattern. There is (on a $4\frac{1}{2}$-inch reel) a difference *apparently* of 3 oz. in favour of the former, but it is not so in reality owing to the difference in the width of the groove in the two patterns. In Hardy's reel it is $1\frac{7}{16}$ inch, and in mine $1\frac{10}{16}$ inch, the result being that a 4-inch reel of my pattern will carry the same amount of line as Hardy's $4\frac{1}{2}$-inch.

It must be admitted, however—all questions of comparative weight apart—that Messrs. Hardy's 'revolving-plate reels' are

in every respect models of finish and workmanship, and a vast stride in advance over the clumsily heavy 'London-made reel.'

In all the foregoing reels the handles are so attached as, in one way or another, to prevent the line getting caught round them.

There is still, however, something left to be desired in this matter of reel and line hitching. The snake is 'scotched,' not killed. In whatever manner the handle may be attached, *the line still is left free to hitch round behind the back of the reel itself*—a freedom of which, it is almost needless to say, it seems to have a provoking determination to avail itself to the utmost. It appeared, therefore, that a stop might be put, once for all, on this never-ending worry, by partly covering over the space at the back of the reel with a 'protector' or guard of



REEL WITH LINE PROTECTOR.

some sort. The mechanical realisation of the idea was easy; the protector springs from the middle bar of the posterior curve, over which (bar) it 'clasps,'—the exterior end pressing close on to and against the rod, whilst the 'interior' end is

fixed to the metal support of the foot plate. This reel-guard will be noticed in the cut illustrating Messrs. Farlow's Lever Reel (p. 59), marked C.

Messrs. Bernard, of Church Place, Piccadilly, have also recently made a 'protector' on the same principle, but differently applied: as it is attached—always, of course, by the middle bar—with a separate spring, forming an equally effectual prevention of 'line-hitching.' Indeed, in one respect, it is even more absolutely 'undefeatable' than my original device, as it occupies the whole width of the reel-barrel. *Per contra* it adds appreciably to the weight, which the original pattern does not. The annexed cut shows Bernard's modification as applied to one of their excellently proportioned silver-bronzed trout-reels.

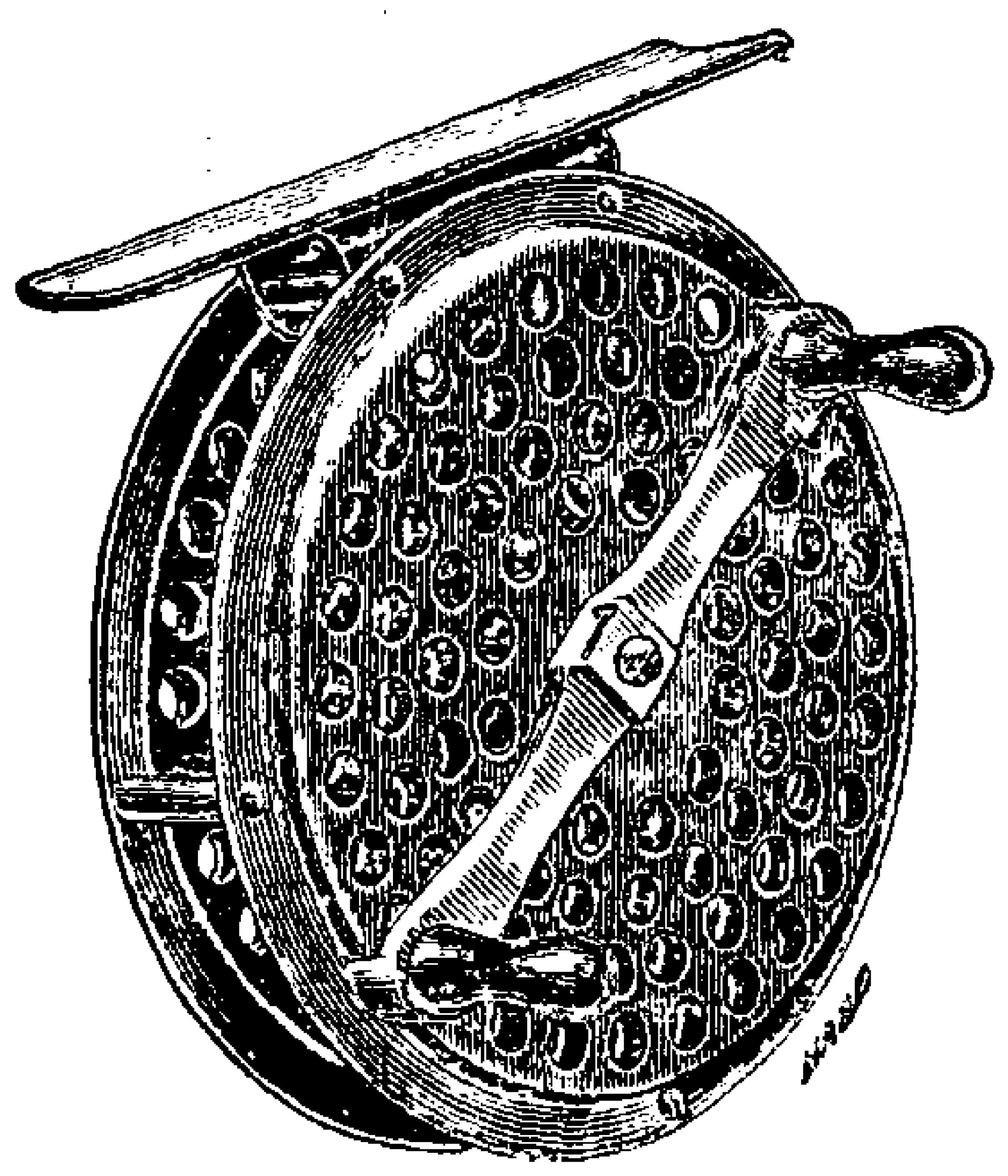
To show how really serious an annoyance this hitching of the line round the reel is recognised to be, Messrs. Foster, of Ashbourne, have actually gone to the trouble of constructing a reel in an enlargement of the rod-butt itself, a plan which,

whatever may be its merits in other respects, it is needless to say effectually overcomes the difficulty.[1]

Some beautiful reels are now made in America, for a specimen of the most perfect of which I am indebted to the courtesy of the inventor, Mr. Chas. F. Orvis, of Manchester, Vermont, U.S.A. This reel, with its extraordinarily narrow barrel, and side plates perforated throughout for lightness,

[1] A good temporary expedient is suggested by 'Hi Regan,' in *How and Where to Fish in Ireland* (Sampson Low, Marston, Searle, and Rivington), the most recent and reliable compendium of information for the tourist to the fishing grounds of the Sister Isle. The improvised 'protector' 'is a piece of light and tough leather (eelskin is the best), sewn round the back-bar of the reel, and bound behind, or taken in under and held by the fixed ring which secures the reel plate.'

seems to me to comprise theoretically all the points of a perfect trout reel, and I find in practice its performance is equal to its promise, its great diameter enabling a fish that 'runs in' to be wound up so fast that the evils of a 'slack line' need seldom be felt. Besides lightness, the perforation of the side plates, allowing the air to get to the line, are intended to prevent the latter rotting if left damp, and I must say that though the line has been—day after day, and in fact since I began to use it some months ago—left wet, it does not seem so far to have suffered any deterioration whatever in consequence. The only imperfection in the reel was that owing to the old-fashioned 'crank' form of handle the line not unfrequently got hitched round it, and to remedy this I have had a handle fitted to mine, as shown in the engraving, which



effectually overcomes the 'hitching' tendency, whilst at the same time increasing the leverage. The double handle is also of considerable advantage in real work, as the handle is more rapidly found, and consequently less time is lost in winding in —this is an advantage possessed by the Slater reel also; and it has saved me many a fish, more especially in boat work, when

the boat has been drifting before a wind, and the hooked fish, as before pointed out, 'runs in.'

The new handle has been fitted for me by Messrs. Farlow, from whom similar reels could be ordered. The diameter of my reel is $2\frac{7}{8}$ of an inch, and the width between the plates $\frac{7}{16}$ ot an inch. It weighs only about $4\frac{1}{2}$ oz.

The reels described in the foregoing pages represent the latest advances that have been made, and amongst them neither the salmon nor trout fisher need, I think, find any difficulty in selecting a reel suited to his taste,—observing again that the question of *weight* is one demanding most serious consideration, especially on the part of fly-fishers who are not burdened with superfluous muscular development. If the lower (untapered) portion of the reel-line—otherwise the 'back line'—which is not used in casting, and which undergoes comparatively little wear and tear, is made to consist of either fine undressed silk or (better) hemp, the total weight may be sensibly reduced without loss either of efficiency or 'compass.'

Allowing, say, forty yards—either of the ordinary taper, or of the swelled taper, as already described, for casting purposes, sixty or seventy yards of hemp line strong enough to hold anything that swims can be got comfortably upon a three and three-quarter or four-inch reel (according to the width of the barrel), and this length will usually be found sufficient for all ordinary purposes.[1] In 'big rivers,' however, as the editor truly observes in the foot-note, this length may be advantageously increased to 120 or even 150 yards, in which case the size of the reel will, of course, have to be increased also. On to a four-inch reel of my pattern I can get 100 yards of back line, consisting of very fine, solid plaited, superficially

[1] I like 130 to 150 yards on the reel for salmon fishing—75 yards of each sort of line. In big rivers I have had a good deal of the second half run out by a heavy fish. The having two kinds of line indicates, when the second begins running, at what distance the fish is from you, which in very broken water is sometimes difficult to ascertain.—ED.

dressed, hemp, and forty yards of medium-sized swelled dressed silk taper, as thick as is suitable for casting with any rod up to fifteen or sixteen feet. The hemp backing is about as fine as a fine trout reel-line, and I found *one yard of it* drew out the steelyard to *twenty-three pounds before it broke.* This hemp line will also last right well. The 'back line' and the tapered, or casting, part of the line should be very carefully and neatly lapped together with fine waxed silk at the place of junction, so as to obviate any danger of the line getting stuck in the rings at that point when running out with a fish. If small stiff steel rings ('snake' pattern best, see p. 80), such as I use myself and advocate for *every description of rod*,[1] are adopted, the chance of a 'hitch' at the critical moment will be reduced to a minimum.

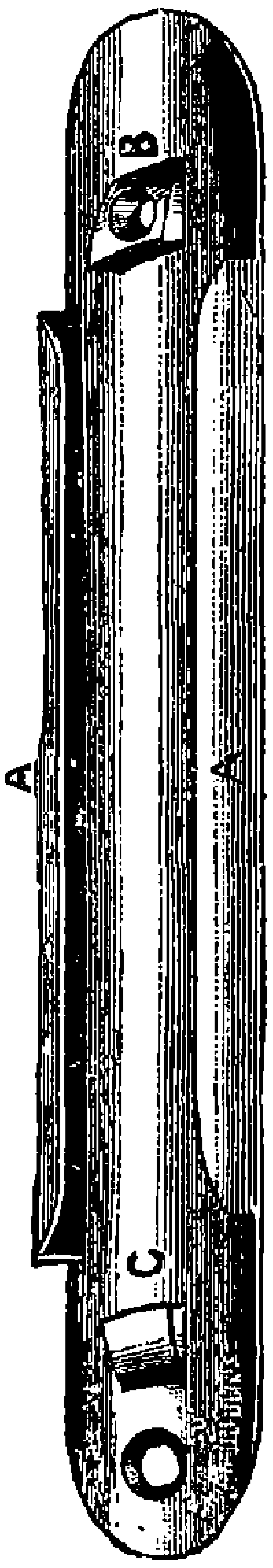
In the foregoing observations on reels generally I have assumed that all practical fishermen will use a reel which is either normally a 'check,' or that can be made into a check at pleasure. The old-fashioned 'plain reel,' as it is called, possessed certainly the merit of being plain—very plain, indeed, we should think nowadays!—and simple, in the sense of not being likely to get out of order. But there its merits end. When there is no 'check' to interfere with the rapid rotatory motion of the wheel set going by a heavy fish, there is nothing in the mechanism to prevent the line 'over-running,' the result of which is usually a complete stoppage at the critical moment.

Multiplying reels are at least equally objectionable upon another ground, namely, that, when 'winding in' a fish, the old mechanical axiom of 'what is gained in speed is lost in power' is apt to come into operation with disastrous results. No one can fairly wind-in a heavy fish with a multiplying reel of the old type, and now that reels with deep narrow barrels, giving increased speed and power, are almost universally manufactured instead of the antiquated shallow, broad-grooved pattern, there is no practical advantage gained by further rapidity of action.

[1] I cordially agree in the advantage of standing rings.—ED.

Next as to reel fastenings—i.e. the attachment of the reel to the rod.

The old double-band attachment has the vice of being only properly suited to a particular sized reel, and in ten years will probably have become obsolete. The same fault is found in a still more marked degree in the class of fastenings of which a specimen is shown in the cut. These attachments 'to measure' all possess the drawback of being inapplicable to any reels except those specially constructed to fit them.



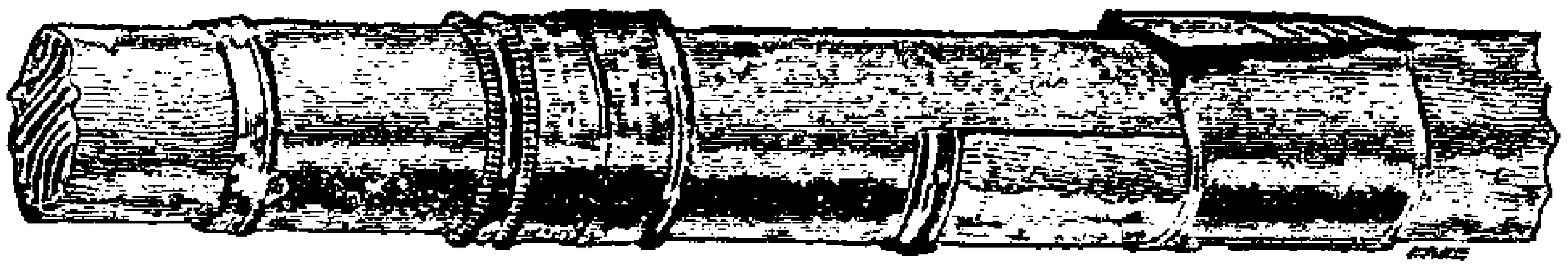
REEL ATTACHMENT 'TO MEASURE.'

I have no hesitation in saying, however, that the above and all other reel fastenings hitherto in use are destined to be superseded by the recent ingenious inventions of a system of attachment which (adaptable to any kind of rod) will with equal ease take in any size of reel. One —I think the earliest—of these is that adopted by Hardy Brothers, and known as 'Weeger's Wedge-fast' (cut, page 72). It is simple, inexpensive, absolutely secure, and capable, as I say, of being adapted to every size of reel, short of applying a heavy salmon reel to a light trouting rod, which would be useless if feasible.

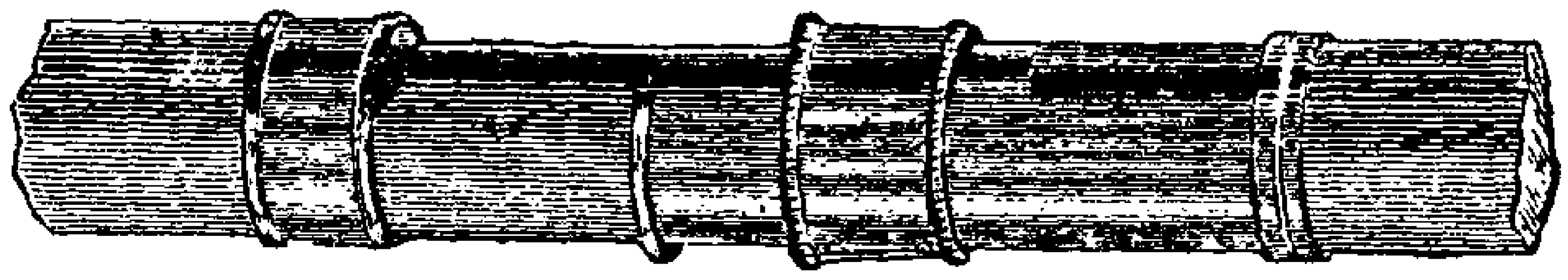
The hinder end of the foot plate of the reel is pushed under a fixed band or clasp having a gradually widening orifice upwards, and of course a narrowing one downwards—in other words, it is wedged in—penetrating deeply or only a little way according to its size and thickness, but in any case being held or jammed perfectly fast in its place. The upper band, or clasp, is then slid down over the upper end of the reel plate, which thus becomes immovably fixed. A diagram of this reel fastening was published in the first edition, in the form in which it was originally exhibited. At my suggestion, however,

Messrs. Hardy have now arranged the bottom clasp so as to completely embrace the circumference of the butt—see engraving—thus adding both to its strength and 'sightliness.'

Messrs. Farlow have also recently brought out a 'Universal Winch-fitting'—shown in the cut—which presents all the same merits as the 'Wedge-fast,' the difference being that in



'WEEGER'S WEDGE-FAST' FITTING.



'UNIVERSAL' WINCH FITTING.

the 'Universal Winch-fitting' the wedge is obtained by a graduated depression in the wood of the butt itself.

RODS.

With regard to fly rods I shall say but little. *Quot homines tot sententiæ.* Some fly fishers like hickory, others prefer greenheart, or lancewood. Some like a rod made all of one wood, others give the preference to a rod with the butt of one sort of wood and the top joints of another, and a great many of the modern school, especially those with whom price is not a matter of importance, have given in their adhesion to the spliced-cane rods, which are supposed to owe their origin to our enterprising cousins on the other side of the 'Herring Pond.'

In the 'form' of the rod again, as in regard to the wood of which it may be constructed, it is rare to find two fishermen of the same opinion. Many still hold to the old-fashioned straight-butted rod, which tapered away with almost mathemati-

cal precision from the reel to the point, alleging, amongst other advantages claimed, that with this shaped rod a spare top can always be carried in case of accident without the inconvenience of a separate top case. Of late years, however, many practical fly fishers—indeed, I think I may say the majority—favour some modification or other of the form of the rod which owed its birth, or, at any rate, its christening, to the *habitués* of Castle Connell—preferring the swishy play obtained by fining or tapering away the butt rapidly from above the reel. . . .

On all these subjects, were I to go into them in detail, I might easily double the length of this chapter, without carrying conviction, or probably amusement, to anybody but myself. I, therefore, refrain from doing more than touching thus lightly on the mere superficial aspect of the question, leaving every man to remain, as, indeed, he ought to be, and would be for anything I could write to the contrary, his own counsel, judge, and jury.

With regard, however, to the now fashionable split-cane rods, a few words on the method of their construction, and on their two principal varieties, may possibly not be uninteresting to those who are not already initiated into the mysteries of this interesting branch of rod-making.

In the 'Art of Fly-Making,' published by Mr. Blacker about thirty years ago, second edition, occurs, I believe, the first notice of split cane rods. 'The beautiful rent and glued-up bamboo-cane fly rods,' Mr. Blacker says, 'which I turn out to the greatest perfection, are very valuable, as they are both light and powerful, and throw the line with great facility. The cane for these rods must be of the very best description, or they will not last any time. They will last for years, however, if really well made, and,' he very properly adds, 'taken care of.' The wood employed in their manufacture is the 'male bamboo,' procured from India; great care and experience being required in selecting only such canes as are of the finest quality and have been cut at the proper season. Fig. 1 shows

a section of the cane of one of these bamboos used in the construction of the larger joints, and it will be noticed that the fibres, shown by the little spot marks, are much denser at the outside than towards the centre, which when the canes are green, is merely pulp. It is only, therefore, this outside part, or rind, that is used in rod-making, and during the process of manufacture the skin must be most carefully preserved from injury, whilst the balancing, &c., of the rod has to be effected before the various strips are cemented together. This is a matter of great delicacy and difficulty, as will be understood when it is borne in mind how troublesome it is to properly balance a rod constructed of even the ordinary solid woods where the plane can be used after the joints are fixed. Either from want of knowledge or proper machinery, many so-called cane rods are put together so that they have to be subsequently filed or planed to get the requisite spring, thus removing the most essential part of the cane. These inferior rods are then painted, or burnt over again to imitate the natural colour of the original skin, from which, however, they are easily distinguished by experts. The dotted lines outside the V in the engraving (fig. 1) show the shape of the strips as first split out—the interior solid line that of the finished strips when ready for jointing after having been 'machined.' The cement used in the process of gluing together is said to be impervious to damp : it is, however, I believe, strictly a trade secret.

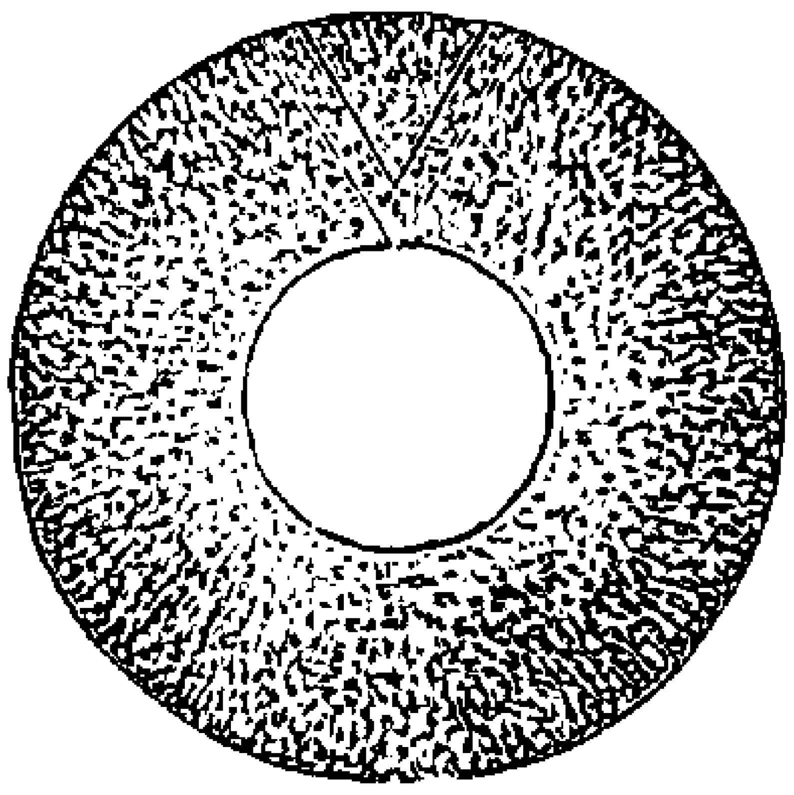


FIG. 1.

Probably one of the reasons why it has been supposed by fly fishers that these rods will not stand the heavy work brought to bear upon them in salmon fishing is the use of inferior cement in the process, and the glue subsequently oozing out of the joints in wet weather, thus tending to make them come loose afterwards. In Mr. Kelson's report on the collection of salmon

rods in the Fisheries Exhibition ('Field,' October 27, 1883), he observes that 'this is always the case sooner or later with these hand-made rods for salmon ; but if eleven years' experience with them be admitted sufficient, I may say that the rods made with the machinery used by Messrs. Hardy, who obtained the first prize for these split-cane rods at the Fisheries Exhibition, for cutting the cane perfectly true, obviate the difficulty satisfactorily.'

The ordinary butts of split-cane rods, as well as the upper joints, are hexagonal, and are simply made of six V-shaped strips, glued together in the manner described. In the highest class of rods, however, the butt is built double, as shown in the engraving (fig. 2), both the centre and external wall being con-

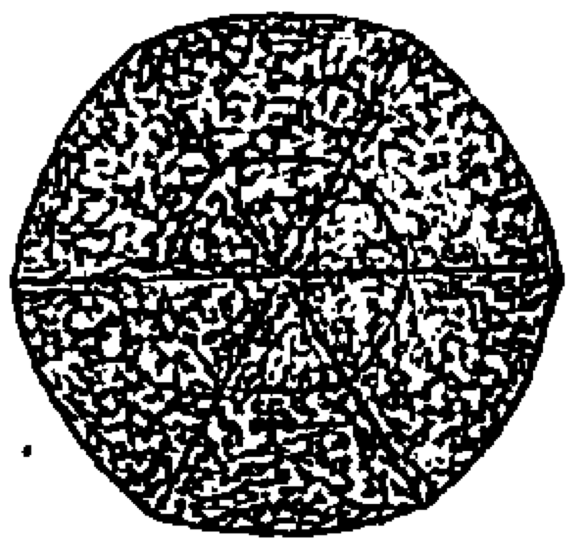


FIG. 2.

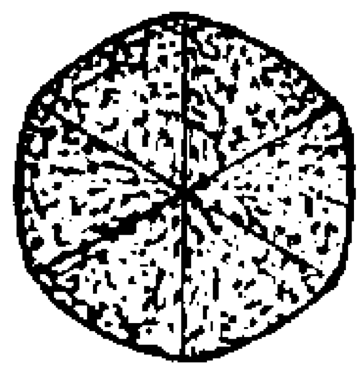


FIG. 3.

structed of separate layers of the hardest part of the cane. The centre is made first in the usual way, and after it has dried the second, or external, layer or wall is built up round it. Messrs. Hardy inform me that although the labour and expense involved in this double construction are, of course, infinitely greater, the strength gained by the process is enhanced to such an important degree that they make all their split-cane salmon rods in this fashion as to the thicker parts. Fig. 3 shows the structure of the lighter and upper joints of the rod.

Complaints have often been made to me that the ordinary split-cane rod is deficient in casting power as against a wind, and I must say that my experience tends to confirm the truth of the statement. In order to meet this objection, however, the above-named manufacturers and others have endeavoured

to make the split-cane rods with a steel centre to each joint, so as to increase their 'stiff springiness,' so to speak. The little dark mark in the middle of fig. 4 exhibits this steel centre or core. The spring is first tapered and then tempered in the same manner that the main spring of a watch would be. After this it is coated with a waterproof and finally built up into the centre of the rod.

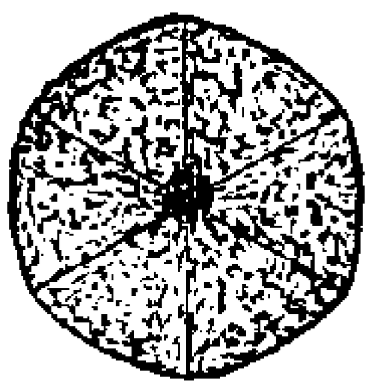


FIG. 4.

I have a light salmon rod made for me on this principle by Messrs. Hardy with which I find I can get plenty of power, whether the wind is high or low, and from whatever direction it blows. In the case of a strong head wind especially, I am disposed to think I can make better casting with this rod than with any I ever used, and it is withal a very handy and fairly light weapon, but quite stiff enough for any ordinary fishing. Its length is fourteen feet. I find that on a calm day I can cast, with heavy salmon line, over thirty measured yards on the level grass, and this, in my opinion, represents as much as is often wanted to be done in practice ; in fact, most casts with the salmon fly will, if measured, be found, I am satisfied, nearer twenty than thirty yards.[1] Of course, I am aware that there are some rivers and, perhaps, some casts here and there on most salmon rivers, in which a longer rod would enable the fisherman to reach some favourable point otherwise inaccessible, but when this cannot be done by wading I am content to put up with the loss of an occasional good cast in exchange for the constant comfort and convenience which I find in a rod of the proportions indicated.

It is all very well to talk lightly of casting forty yards, and so forth, with a twenty-foot Castle Connell, but the man who wishes to do it, and to go on doing it all day, must be of stronger mould or greater height than the ordinary run of mortals. In my opinion a twenty-foot rod requires a seven-

[1] I fully agree. An ordinary fly fisher seldom casts more than twenty yards *properly*. —ED.

foot fisherman to wield it with comfort, and I am quite satisfied that for all ordinary purposes the salmon fisher would get more comfort and more sport, too, with a rod such as that I have described than with a longer and more fatiguing and unwieldy weapon. . . .

It should be borne in mind as a mechanical axiom in this matter of the length of rod, that exactly in proportion as you gain in casting power by the increased leverage, so (the motive force being equal) do you lose in the propelling power by which only the leverage can be utilised—the practical deduction from which proposition is that every man has a length of rod exactly proportioned to his physical strength—a rod out of which, that is, he can get the maximum of casting force compatible with sustained muscular effort—and that it should be his object to ascertain what that length is. Bearing in mind the mechanical argument, I am disposed to think that a shorter and more powerful rod might in many cases be substituted with advantage for a longer and lighter weapon, and this principle has been carried out with success by Farlow in a 13 ft. 6 in. greenheart salmon rod they make according to my instructions. With this rod I get plenty of power and excellent casting; in fact there is little really appreciable difference in these respects between this and the steel-centre spliced bamboo built for me by Hardy, except when casting against a strong head wind.

However, as I have said, these are matters of individual taste, and must be left to the appreciation of individual salmon fishers. Till we have our fly-rods made entirely of steel—an improvement which I take it is only a question of time[1] (unless, indeed, as a reviewer suggests, an objection be made

[1] I have lately seen this prophecy actually realised in a tubular steel trout-rod made by our enterprising American cousins. Unfortunately the principle of this rod, which was that of a telescope, made outside rings impossible, and I found, in practice, that when casting, the friction of the line inside the whole length of the rod, made it next to impossible to get out line, whilst with a fish on—even a three-pounder—the same result followed, only in a much greater degree, and not a yard of line could be taken out by the fish unless the rod was pointed straight at him like a gun.

on the score of carrying about a 'lightning conductor'!)—one or other of the salmon rods above described will probably be found as perfect a weapon as any fly-fisher need desire. With a slightly shorter top either makes an excellent rod for heavy lake trolling, spinning for salmon, &c.

The following are the dimensions of the greenheart rod, above referred to, made by Messrs. Farlow:

Length when put together with india-rubber knob . . .	13 ft. 6¾ in.
Weight with ferrules and upright rings, but without india-rubber knob on butt	1 lb. 9 oz.

[The india-rubber knob weighs 3 oz. more, but it is of great practical comfort and convenience, and no salmon rod should be without one.]

	in.	16ths
Circumference of butt at reel above metal work	3	5
,, ,, at middle.	2	5
,, ,, below ferrule	1	10
,, of large joint at bottom, just above ferrule	1	9
,, ,, just below top ferrule	1	3
,, of top joint, just above ferrule	1	2
,, ,, 2 in. from top ring		8½

The split cane with steel core makes a handy powerful trouting rod for heavy work. The length of mine is ten feet seven inches when put together, and the weight ten ounces. It has three joints and ferrules. I can cast about twenty-two yards with it on a still day on level ground; and the combination and 'correction' of stiffness and swishiness leave, to my mind, nothing to be desired.

The following are the weights of ordinary split-cane rods, ounces for feet:

From 10 to 12 ft. . . .	10 to 12 oz.	17 ft.	38 oz.
13 ft.	14 oz.	18 ft.	42 oz.
14 ft.	18 oz.	19 ft.	48 oz.
15 ft.	25 oz.	20 ft.	54 oz.
16 ft.	26 oz.		

N.B.—The steel centres add from 2 to 3 oz. to these weights.

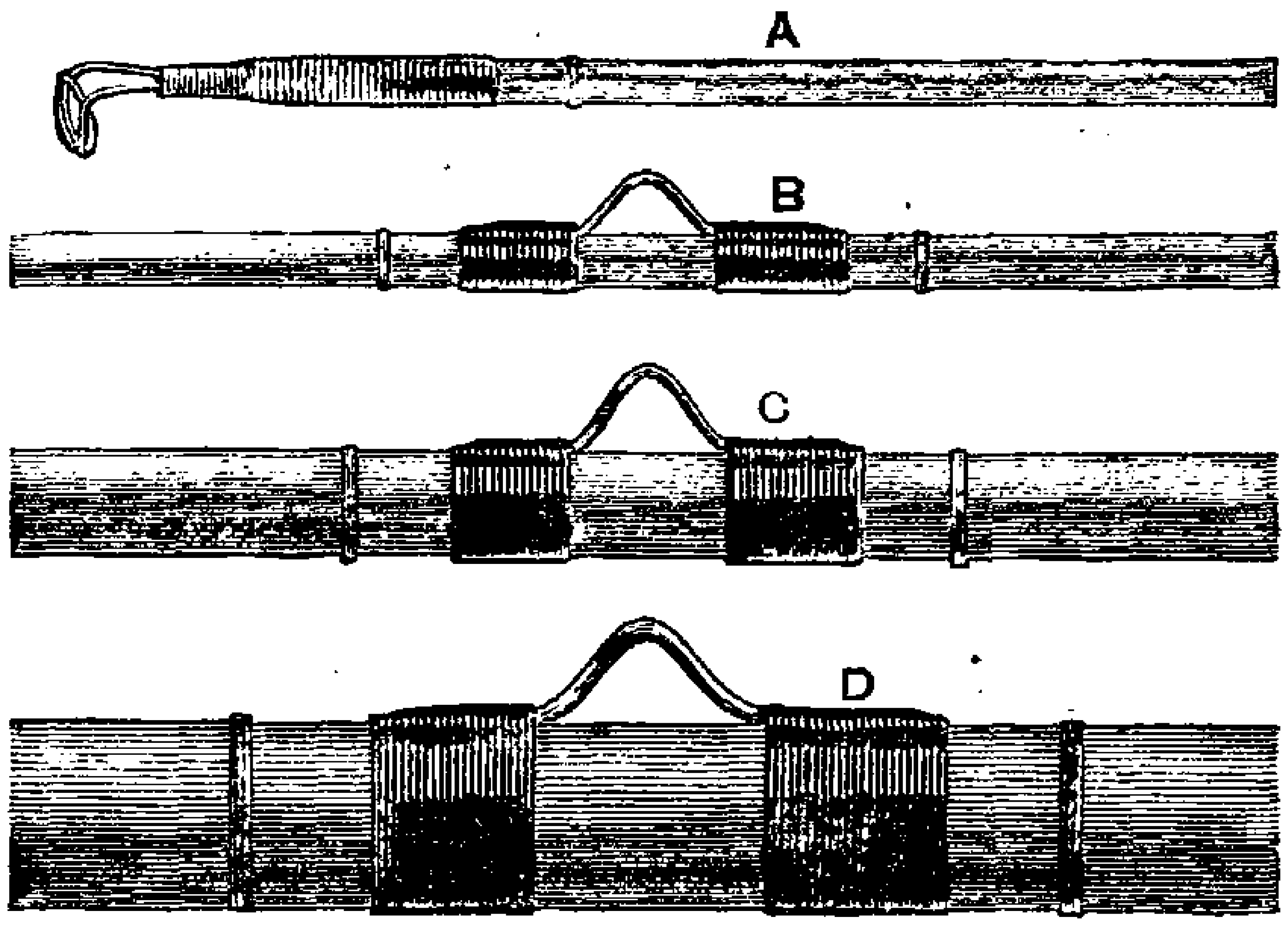
I find no advantage in a single-handed rod much over ten feet, as it generally results, in my experience, in both hands

being sooner or later called into requisition. If the size of the water demands a larger rod, then I should advise a double-handed rod at once. Such a rod should not exceed thirteen feet, nor weigh more than from 16 to 18 oz.

Ladies' rods can hardly be too light for real pleasure, as not only their wrists are weaker and their muscles softer than ours, but they have seldom acquired the knowledge of using what physical powers they do possess to the best advantage. This is half the battle, as anyone knows who has tried to lift a trunk that some diminutive porter, perhaps, has just been carrying about in a light and airy fashion as if it were a mere feather-weight. Eight feet and a half, or so, is ample for a lady's single-handed fly rod, and such a rod should not exceed eight ounces in weight. These are the measurements of a spliced rod belonging to a lady of my acquaintance; which is as serviceable and handy a little 'tandem lasher' as a trout can wish to be coaxed with. It was made by Mr. Jas. Ogden, of Cheltenham, whose 8½ and 10 feet spliced rods—*of greenheart, N.B., not blue Mahoe*—are excellent. With one of these latter rods I have killed, during several years past, I hesitate to say how many stone weight of brown and white trout—some of them up to 4 lbs.—and it is still as sound in every respect as the day I first put it together. It has had to take its chance with all sorts of rough work—boat and bank—but not even a ring is bent. This last is owing to the form of ring with which it is fitted.

The cut shows the form of this ring, now called the 'snake' ring, to which I have to some extent, it might be said, 'stood god-father.' At any rate, since prominent attention was first called to it in 'Modern Improvements in Fishing Tackle and Fish Hooks,' it seems to have become more or less the 'fashion' with tackle makers, and, therefore, it may be presumed, with their customers. A, B, C, and D are facsimiles of snake rings—which should be eight in all—suited to my pattern of 13 ft. 6 in. salmon rod. For trout rods of all kinds the rings should be both smaller and of lighter wire. The

form of the ring gives it these undeniable advantages over the old pattern, whether upright or movable: it can hardly get bent; it cannot practically get broken; it cannot stick in the rod bag.



In thus describing my four favourite fly-rods, I have indicated in the most practical manner I can the description of rod which has appeared to afford, on the whole, the best combination of qualities for the different descriptions of fly-fishing. The rods especially suitable for lake trolling, worm-fishing, salmon spinning &c., &c., will be referred to under the separate chapters dealing with those subjects.

Before taking leave, however, of the subject of rods and rod fastenings, I should be omitting a most important item if I failed to direct attention to the various improved methods of uniting and fixing the rod joints.

Until the Fisheries Exhibition either called forth, or called into public notice, these inventions, joint fastenings may be said, so far as any general adoption of them is concerned, to have been comprised in three categories. The first, the ordinary ferrule joint, in which one joint slips into the other—and it may be added, out of it again with considerable regularity

at inauspicious moments; secondly, the spliced joint; and, thirdly, the screw fastening, peculiar, so far as I am aware, to the rods turned out by some Irish makers.

I have one of the last named still in my possession made for me by Martin Kelly, of Dublin, I am afraid to say how many, but certainly fifteen or twenty years ago, which has seen some service in its day and is still fit to take the field. I therefore speak of this fastening with respect. It had its drawbacks, however. Perhaps owing to the necessity of the case, or perhaps to the incomplete application of mechanical knowledge, or a little of both, the ferrules which were *attached to the upper joint* and slipped down from above in the manner shown in fig. 1, and subsequently screwed into the position shown in fig. 2, had an awkward habit of breaking at the point where they were attached by a screw or rivet to the upper joint. Consequently, I need not say that since I have become its owner that single-handed three-joint trout rod of about eleven feet, has paid several enforced visits to Dublin for purposes of reparation.

The 'Irish joint,' as I will call it, had the speciality of keeping the water drippings to a great extent out of the joint.

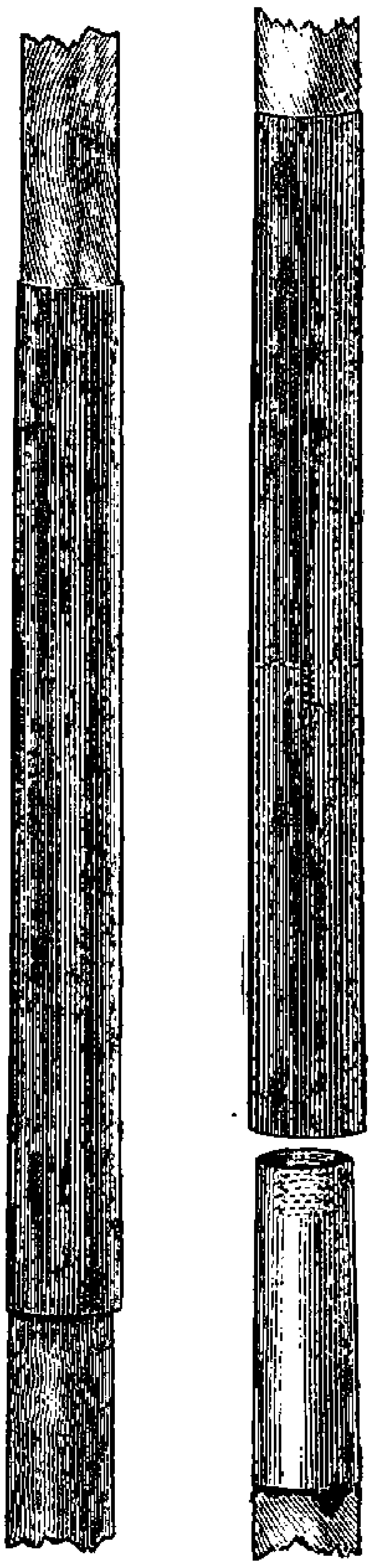
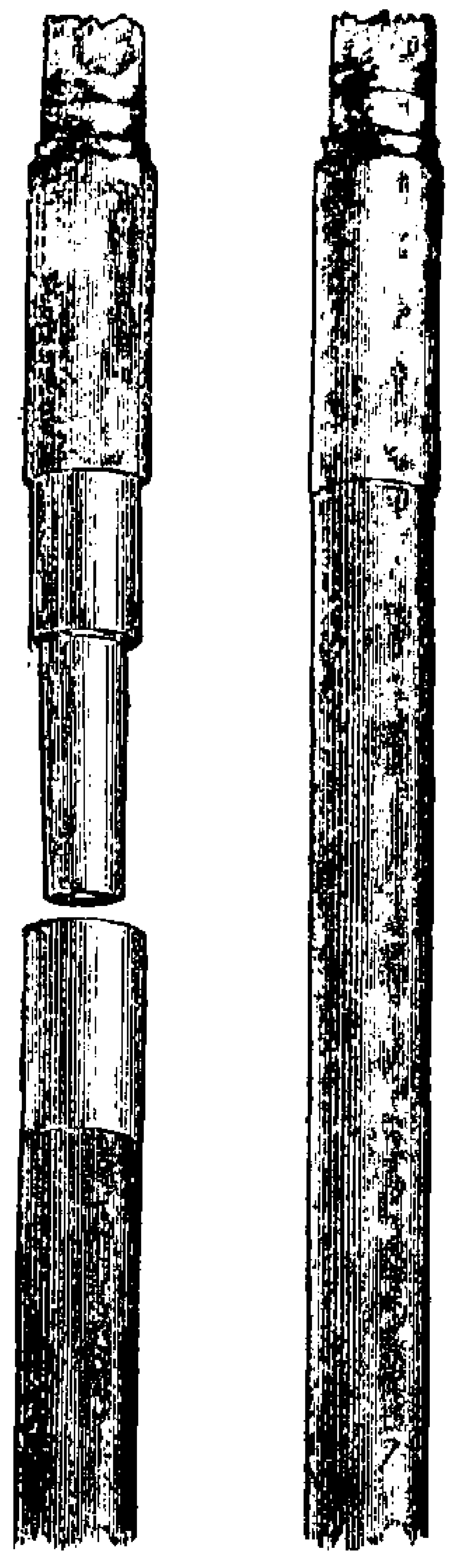


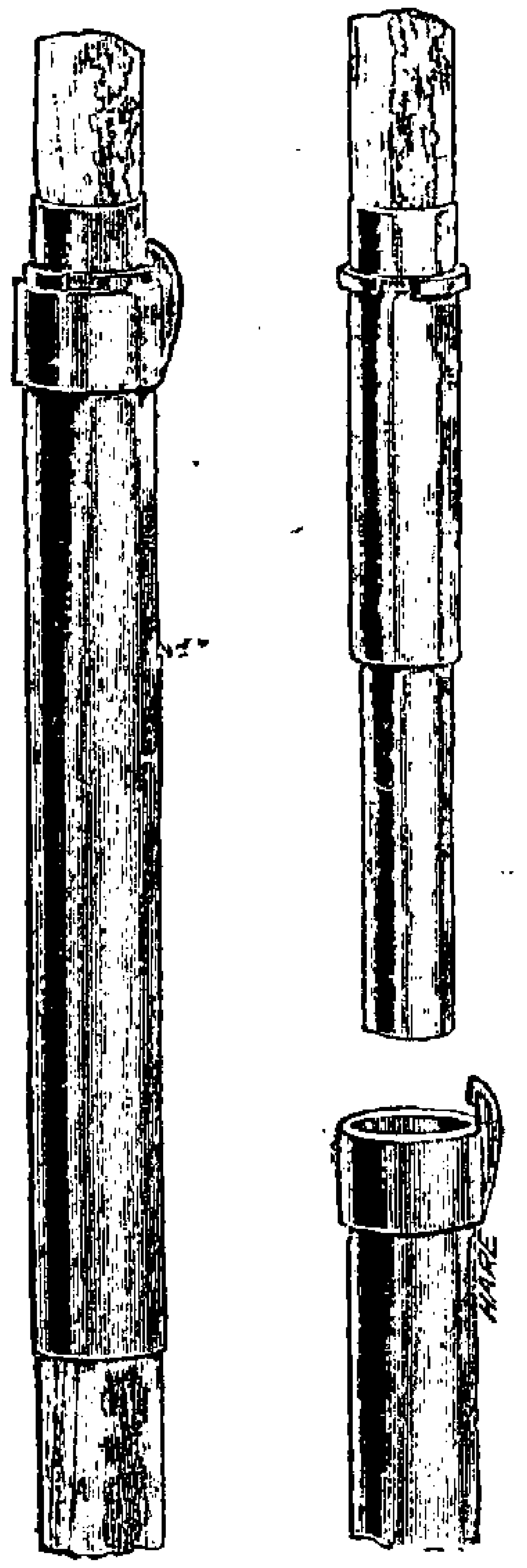
FIG. 2. FIG. 1.
IRISH JOINT.

Another rod fastening possessing this latter advantage in combination with some other very excellent points, is manufactured, and I believe invented, by Anderson & Sons, of Edinburgh and Dunkeld. The upper ferrule is double (*vide*

fig. 3 in engraving), having a sort of external sheath, into which the upper inch or so of the lower ferrule slips, and is twisted to its place by the hand. It fits closely, and I can well believe



3. FIGS. 4.
ANDERSON'S 'SIMPLEX' JOINT.



5. FIGS. 6.
BERNARD'S LOCK JOINT.

Mr. Anderson's assurance that it will not slip or change its position in any way during a day's fishing. Indeed the only difficulty I have personally experienced in using this ferrule, is that of taking the joints apart again. The makers tell me this

may be facilitated by carefully wiping the inner ferrules with a silk pocket handkerchief before putting the rod together. Fig. 4 shows the joint when united.

The only drawback that I see to this fastening is that, should either the fine outer, or 'doubled,' ferrule get dinted, or damaged in any way, the joint will, of course, absolutely fail to close. In order to make such a contingency impossible there ought to be plugs for both halves of the joint.

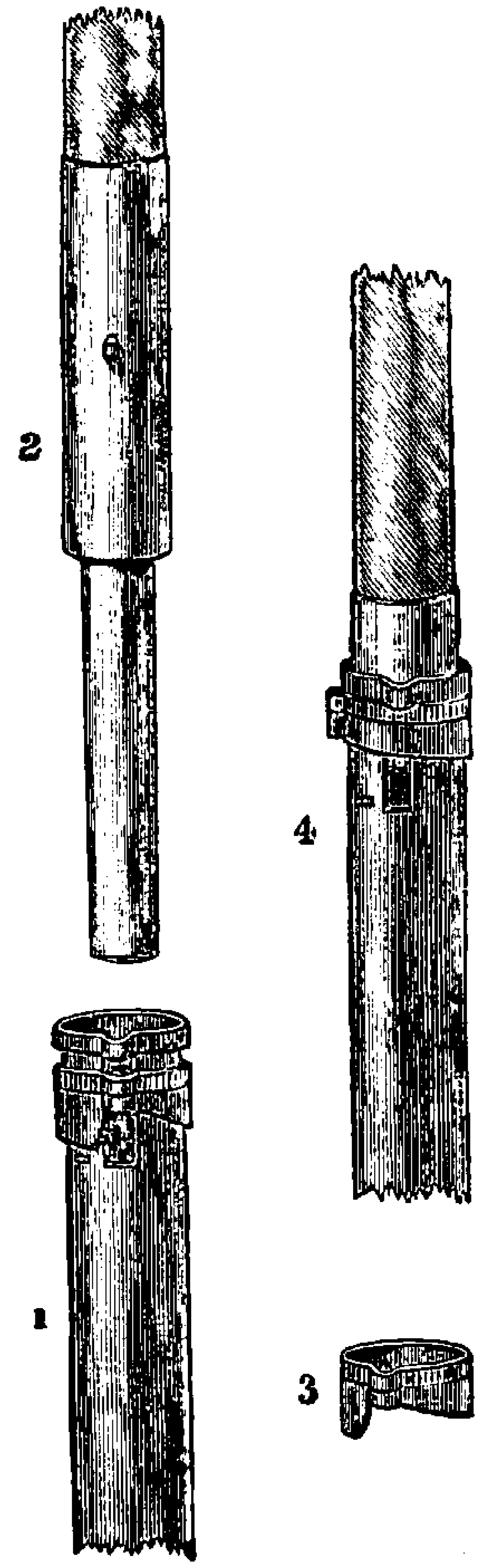
A still simpler jointure than the 'Simplex,' and one, I should say, in every way most admirable and efficient, is Bernard's Lock joint (see figs. 5 and 6), in which the upper ferrule, furnished with a projecting 'rim,' is simply slipped down into its place and turned under a 'catch' (attached to the lower ferrule) till the rod rings are in line, by which process the joints are effectually locked. This jointure is also 'waterproof.'

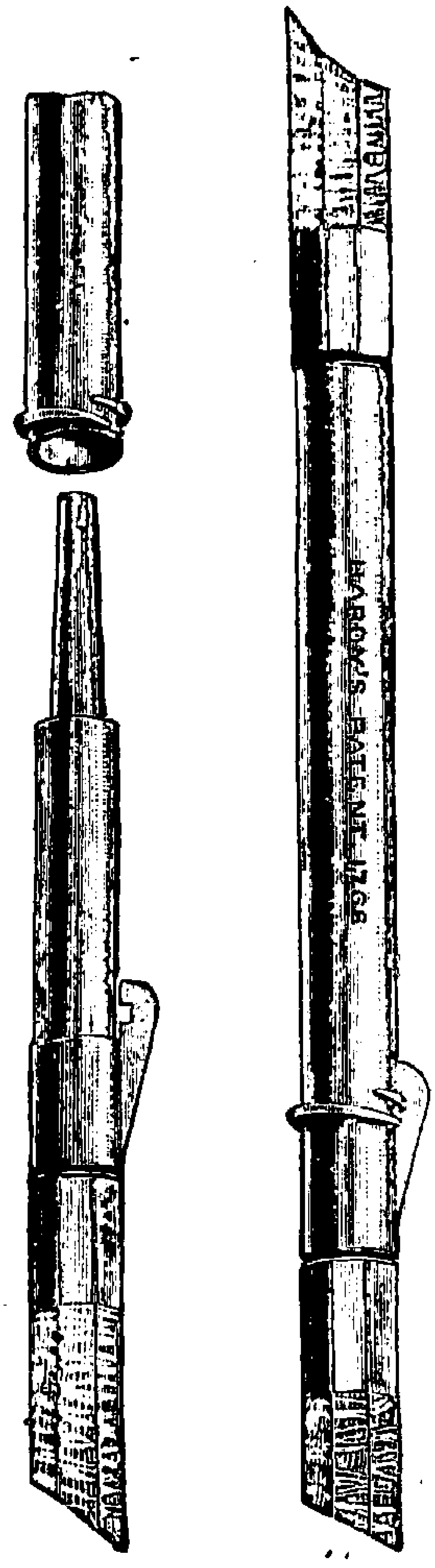
Farlow, who exhibited at the Fisheries Exhibition a joint on a completely different principle—a screw 'nut' locking the

inner and outer ferrules—has since registered another lock-fast jointing, on a new and, as it would appear, much improved plan, viz. that of a movable band, &c. (figs. 7 and 8.)

Lastly we have Messrs. Hardy Brothers' 'patent lock-fast' joint, which is thoroughly sound and serviceable, and also waterproof. The method of fastening the attachment is shown in fig. 9 of the engraving, where the two portions of the joint are seen separate, whilst fig. 10 shows the joint when locked and in position.

The spiral wire on the outside ferrule gives some additional strength where most required, and Messrs. Hardy's system of brazing an additional short ferrule, the same size as the outside ferrule, on the top of the inside one, is a decided advantage, as it strengthens the joint just at the point where so many break-





7. FIGS. 8.

FARLOW'S JOINT.

9. FIGS. 10.

HARDY'S 'LOCK-FAST' JOINT.

ages occur, and is superior to the plan sometimes adopted of putting the inside ferrule on flush with the wood.

Amongst these several rod fastenings the fly-fisher can easily choose for himself. Any one of them will be found in practice immeasurably more convenient than the old-fashioned unfixed double ferrule or even, perhaps, for the ordinary run of fly-fishers, than the spliced joint, though the latter gives the most perfect play to the rod when once adjusted.

If, by the way, the rod joint should become stuck in the ferrule, the best and, indeed, the only means that I know of for separating it, is to turn it slowly in the flame of a candle at the 'sticking point,' when the swelling of the outside ferrule produced by the heat will generally enable a separation to be effected without damage to anything beyond the rod varnish. A little grease rubbed on to the ends of the joints before starting will, especially if the joint be not 'double brazed'—i.e. covered with brass as to the lowest part of the plug—often anticipate 'lesions' of this kind, and prevention is better than cure.

Quitting now the subject of rods, reels, lines, and hooks—the apparatus, that is, destined for hooking and playing a fish—the next and by no means unimportant question, is how to land him.

For all fish of the trout and salmon species up to three or four pounds in weight a net will be found the most convenient and serviceable implement for this purpose—the province of the gaff coming in only in the case of larger and heavier fish. I will not here enter into the vexed questions of net or gaff on salmon rivers, although there is no doubt that nets can be made large enough and strong enough to 'bag' the largest salmon that ever took a fly, and to do all the work of the gaff, and do it effectually, whilst at the same time probably saving the lives of many gravid or unclean fish which ought to be returned to the water—saving also, when the fisherman is a conscientious observer of the salmon laws, a considerable amount of time and temper.

Putting this question aside, however, the use of the landing net, as I have observed, is practically confined to fish under about 'salmon size,' the gaff, on the score of portability, possessing a decided advantage in the case of heavier weights. Turning, therefore, to the subject of nets adapted for the purpose indicated, we find that the stimulus given to angling inventions by the Fisheries Exhibition has not left us without some distinct advance in this direction also.

The portability of nets, as well as of gaffs, is of primary importance to the trout fisher, who constantly does his work without an attendant. This is one sort of portability. Another is the portability of the net, not as considered with reference to the fly-fisher's shoulder or pocket, but in regard to his rod case or portmanteau. A net that does not 'compress' or fold up in some form or other is a most unmanageable and inconvenient addition to a traveller's *impedimenta*, and numerous inventions have accordingly been made to supply this demand. Hoop-shaped nets, both of steel and whalebone, which stretch out at full length and thus form, when not in use, an appendage that can be readily strapped on to, or carried in the rod case, are amongst the ingenious dodges which the inventive talent of tackle-makers or their patrons have called into existence, and several of the most recent of these will be found figured in the appendix to Vol. II. A less modern invention was the steel hoop in three joints, which, when out of work, could be folded up with the net around it into a shape and compass not much unlike that of the fish itself. This net, however, has the disadvantage of being heavy, and unsuited to the second great requirement in the matter of portability—so far as the fly-fisher or worm-fisher is concerned—or, in fact, in the case of anyone who fishes without an attendant—namely, that he should be able to carry his own net, and that in a form and in a position where it will be most out of the way when not required, and most ready at hand when wanted.

This position is undoubtedly under, or just behind, the left arm or shoulder of the fisherman. Here it would or

should hang clear of all embarrassments caused by the creel or fish carrier, and ready, of course, to be taken hold of by the right hand, when, at the proper moment, the rod is transferred to the left.

Without occupying space by discussing the merits and demerits of various nets, handles, and net carriers which do not fulfil these requirements, let me proceed at once to describe a combination which does so. I call it a 'combination' because the net is the invention of Messrs. Hardy Brothers, and the

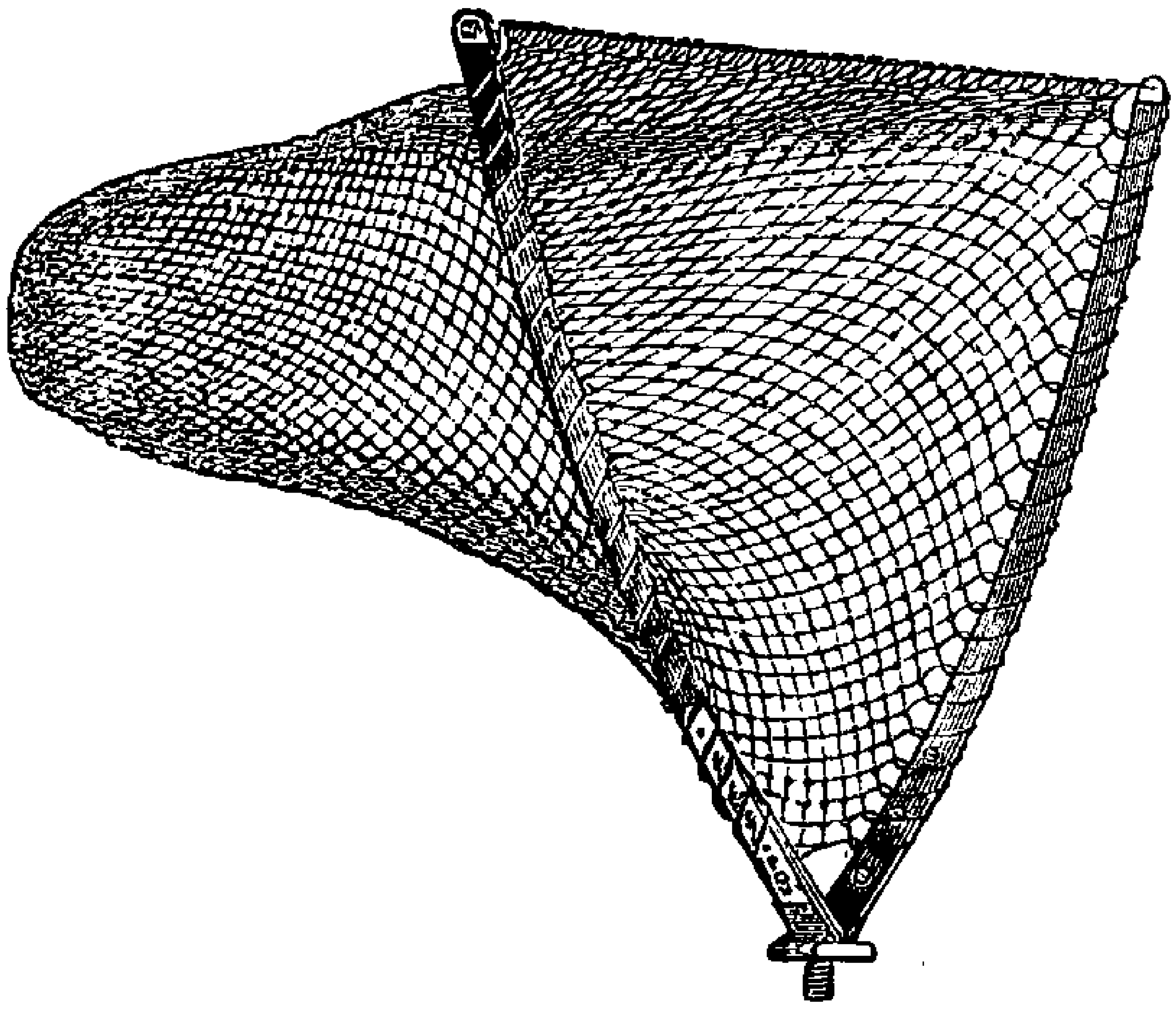


FIG. 1.

handle and carrier that of Messrs. Williams, Great Queen Street, Lincoln's Inn.

The net, as will be seen by the engraving (fig. 1), consists of two side pieces, made of flexible wood, and these when stretched to their proper dimensions, and so held by the brass socket into which the right-hand side slips, are kept at the regulated distance by a cord stretched between the two upper points. The net itself—as all nets should be, in order both to keep them from getting rotten, saturated

with water, or entangling the tackle—is made of fine oiled, that is, 'dressed' silk. It will be readily seen that the shape of this net favours its being carried in the position I have indicated, namely, under and behind the left arm — for which purpose, however, it is necessary that it should be limited in size, the limit being about 14½ inches between the projecting arms. But this allows ample space for netting a fish up to 2 or 3 lbs.—or, at a pinch, even more. The net engraved has a width of 1 foot, and is suitable for lighter fishing.

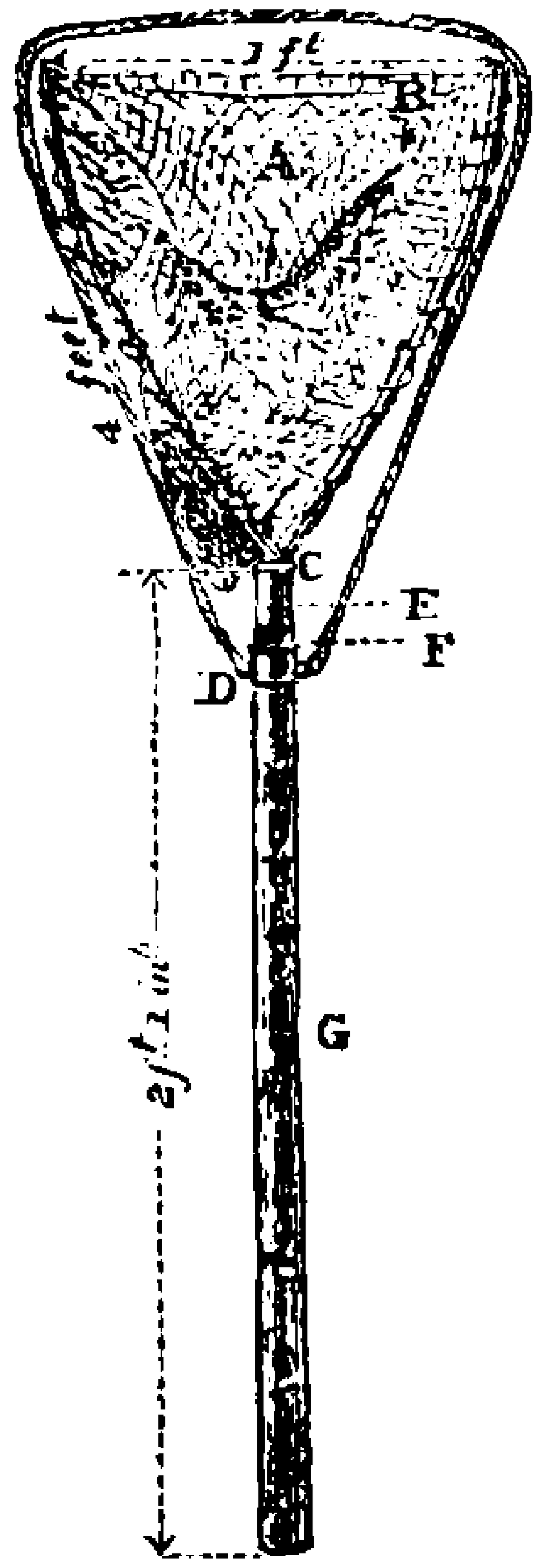


FIG. 2.

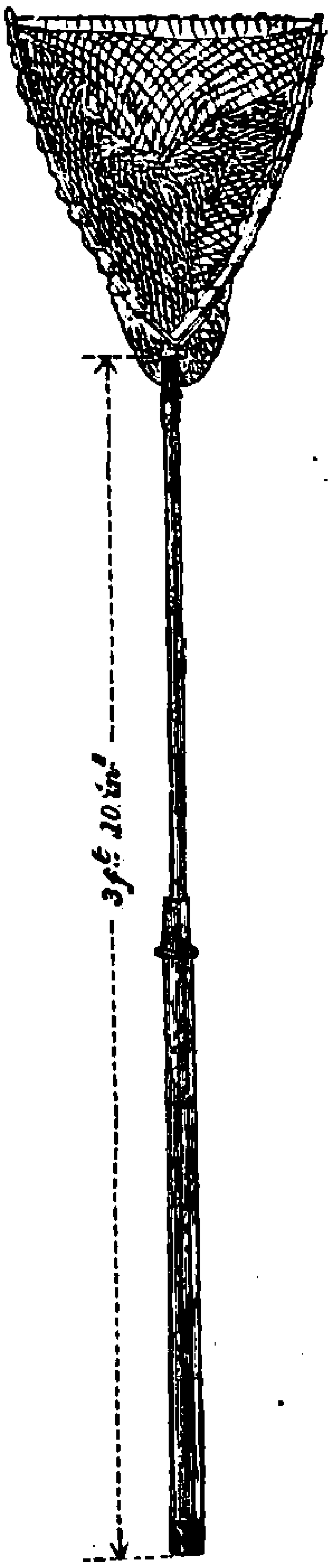


FIG 3.

The handle, with the net and suspending cord complete, are shown in the engraving (figs. 2 and 3), where also the other dimensions of the net are given. A represents the net; B, the top connection; C, the net-screw working in ferrule E on net handle; D is a loose movable metal band held by the projecting rim, F (in later models moved up to C), out of which it slips easily; and G is the exterior or lower half of

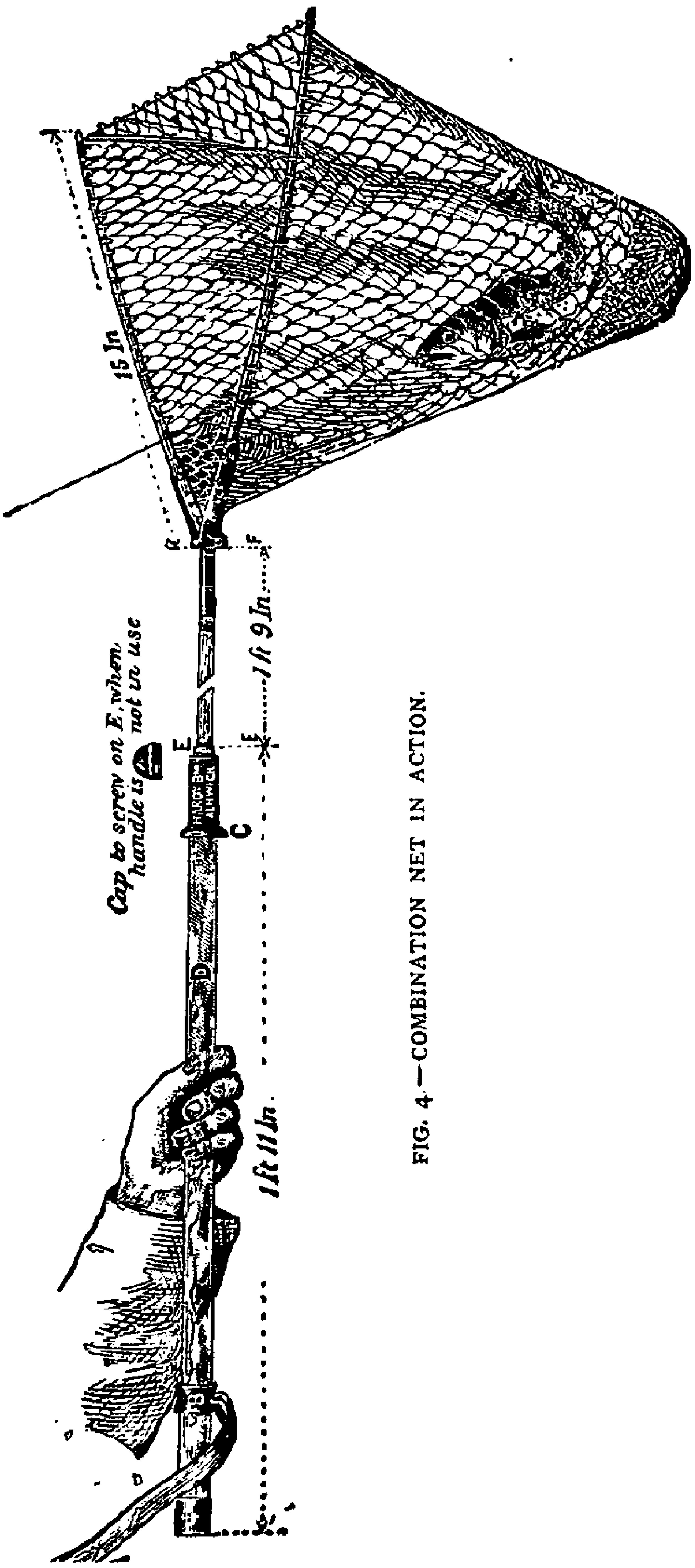
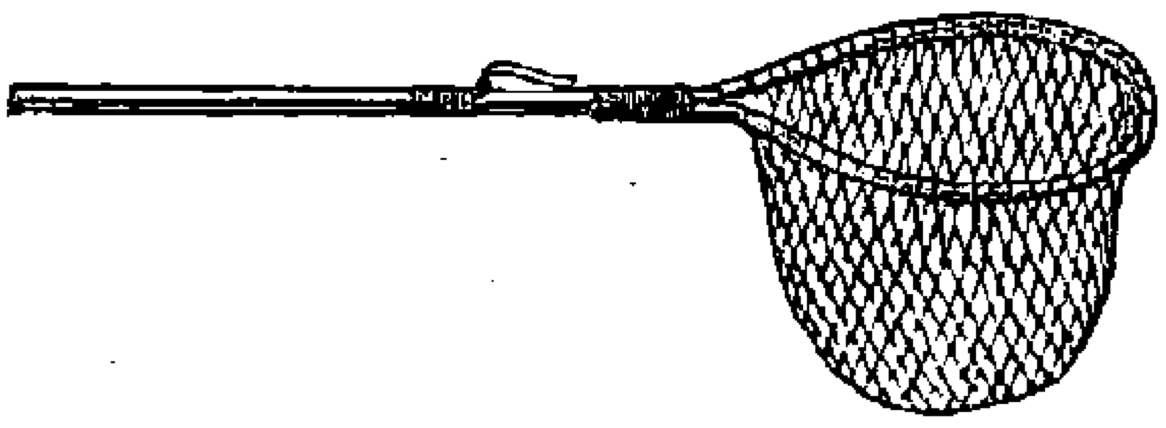


FIG. 4.—COMBINATION NET IN ACTION.

the handle, into which the upper half telescopes. Weight of handle and net figured, fourteen ounces. Should the net show the least sign of being top-heavy when suspended, the addition of a small piece of lead at the bottom of the handle will adjust the equilibrium.

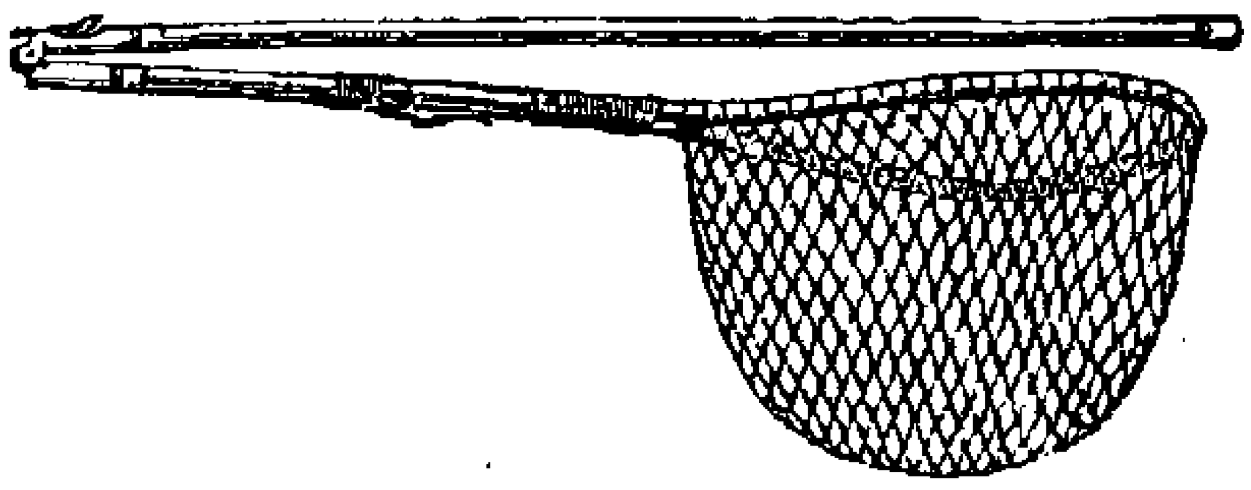
When the net is to be used the fisherman grasps it at E, and pulls it at once out of its socket D, in which it hangs suspended only by balance. By a sharp forward and then backward jerk of the net, which he now holds in his right hand, the length of the handle is doubled, and the total length of the net extended to four feet ten inches, of which three feet ten inches are represented by the handle and one foot by the net (*vide* fig. 4).

The advantage of a net of this sort—or some other pattern answering the same purpose—especially when wading in the middle of a stream, either when fly-fishing or worm-fishing, can hardly be over-estimated. The Hardy-Williams net-handle takes also a gaff suitable for light work.



'POCKET' WADING NET.

A very convenient net for trout-fishing, especially with the worm, when the fisherman can bring his fish close up to him, and does not want to disturb the stream by frequently getting out on the bank. Best length, 2 ft. 6 in.; ring, 10 to 12 in. diameter; weight, 6 or 7 oz.



FARLOW'S IMPROVED PORTABLE LANDING NET.

This is a larger implement—5 ft. long open—and a very

covenient net for any sort of bank-fishing. The 'suspension' is from the hook, passed over the creel-strap, and the 'disengagement,' as well as the movement for extending and bringing it into action, are exceedingly rapid. The length when closed is 2 ft. 7 in. Both the foregoing nets are non-collapsing.

In taking a fish out of this or any other net the best plan, I find, is to grasp the fish first *in* the net; then administer the *coup de grâce* and extract the hook. In boat-fishing this will save much time, and usually when it is most wanted.

In cases of heavy fish a more powerful and solid gaff handle than that fitted to the 'combination' net is desirable. This, of course, presents no difficulty when, as is usually the case, the salmon fisher is accompanied by an attendant who carries both the weapons and spoils of war. A hollow bamboo, 5 or 6 feet long—or say 6 inches longer than the rod joints, so as to carry a spare top—makes a comparatively light and at the same time thoroughly efficient handle. The 'flaw' in it is that the screwed-in gaff is given to turning in its socket, a performance as often as not accompanied by the loss of the fish. To remedy this I got Farlow to drive a steel rivet *right through* both gaff-ferrule and the screw of the gaff itself, the pointed end passing through and screwing into the opposite side (only). This, of course, makes any turning or twisting of the gaff impossible, whilst it is readily unscrewed whenever the gaff has to be taken off.

PENNELL GAFF-FIXING.

Should it happen that 'Donald is too late,' or that the salmon fisher has to depend on himself for gaffing his fish, a largish gaff with a handle only a few inches long, and a knob at the end, that he can slip into his coat pocket, will be found most convenient. Some time is, of course, required in killing a fish under such conditions, as he must be brought within arm's

length of the fisherman who has only got his left hand with which to 'show him the butt,' as the expression is; but that it is a perfectly practicable performance I can testify, having done it over and over again myself, sometimes in the case of very heavy fish. Indeed, even when I have had an attendant carrying the ordinary long-handled gaff, I have frequently preferred gaffing the fish with it myself rather than run the risk of the clumsy treatment which it is too likely to receive at his unskilful or unpractised hands.

It is curious how difficult it is to become a really first-rate gaffer. Indeed it seems to be an accomplishment as a rule entirely beyond the reach of the uneducated, or half-educated, man. I fail at this moment to recall more than two or three instances—notable ones, I admit—of a gillie or keeper being really an adept in the art, and not once, but constantly I have, I fear, disgusted my professional 'fisherman'-attendant by either gaffing my fish myself with the right hand, whilst the rod was held with the left, or summoning to my assistance the trusty friend and companion of many a red-letter day's salmon and pike fishing to whose steady nerve and skilful hand I owe not one but scores of fish that would never otherwise have been brought to bank. . . .

On a very rocky bit of the upper part of the Usk where we —Mr. Edwin Darvall and myself—have killed some hundreds, if not indeed thousands, of *salmonidæ*, the gaffing business was the despair of my friend's faithful henchman, Timothy—as it is written of him:

> The wily Tim with dextrous gaff
> Tries hard to cut the line in half;

and I am afraid he has many a time thirsted for my blood when his master has insisted upon my depriving him of his 'wand of office' at the critical juncture. On one occasion the wily Tim not only succeeded in thus cutting the line whilst failing to gaff the fish, but also, by what Artemus Ward would call a 'dextrous movement,' managed to bring the gaff point

into contact with the flank of his master's favourite bull-dog. Between the imminent peril to his legs on the one side and to his head on the other, the faithful Tim's chances of getting off with a whole skin were at that moment not worth a pin's purchase ; but Fate came to his assistance—the gaff turned in the handle, thus releasing its astonished and howling victim, and his master's gathering wrath found vent in a peal of irrepressible laughter. 'Pongo,' however, who I was delighted to meet a few days ago as broad and as 'bull-doggy' as ever, will bear the gaff mark till his dying day.

Gaffing in really rapid torrents is a matter of considerable physical as well as artistic difficulty, and the choice is frequently between Scylla on the one hand and Charybdis on the other. It is often necessary to gaff 'when you can,' to snatch a passing stroke, that is, in the middle of an intervening shallow, or to take a mean advantage of the glimpse of a back fin as it is carried past in a whirl of foam by its still struggling, though retreating owner. In trying these impromptu conclusions, however, the victory is not always with the gaff. Repeatedly, I have seen—and I may say felt!—the bearer of the gaff dragged head over heels into the stream by the vigorous efforts of a salmon which he was endeavouring to gaff before it was, to use angling vernacular, half-killed. Many similar catastrophes I have seen averted only by an ignominious let-go of the gaff, and it has more than once happened to me personally to be saved from a ducking by the gaff handle or hook or both giving way.

I well remember a tussle of this sort when fishing the Usk, two or three years ago, below Pantysgallog Bridge. I had hooked a heavy fish under the fall—at this spot a series of 'rushes' over sharp gradients—and he at once headed straight up-stream for the heaviest of them, half-foam half-water. Here he 'sulked,' and nothing I could do would move him. The keeper was invisible, but I managed to get hold of the gaff from the bank where it lay, and then by some slight exercise of agility secured a foothold on a flattish rock right over where

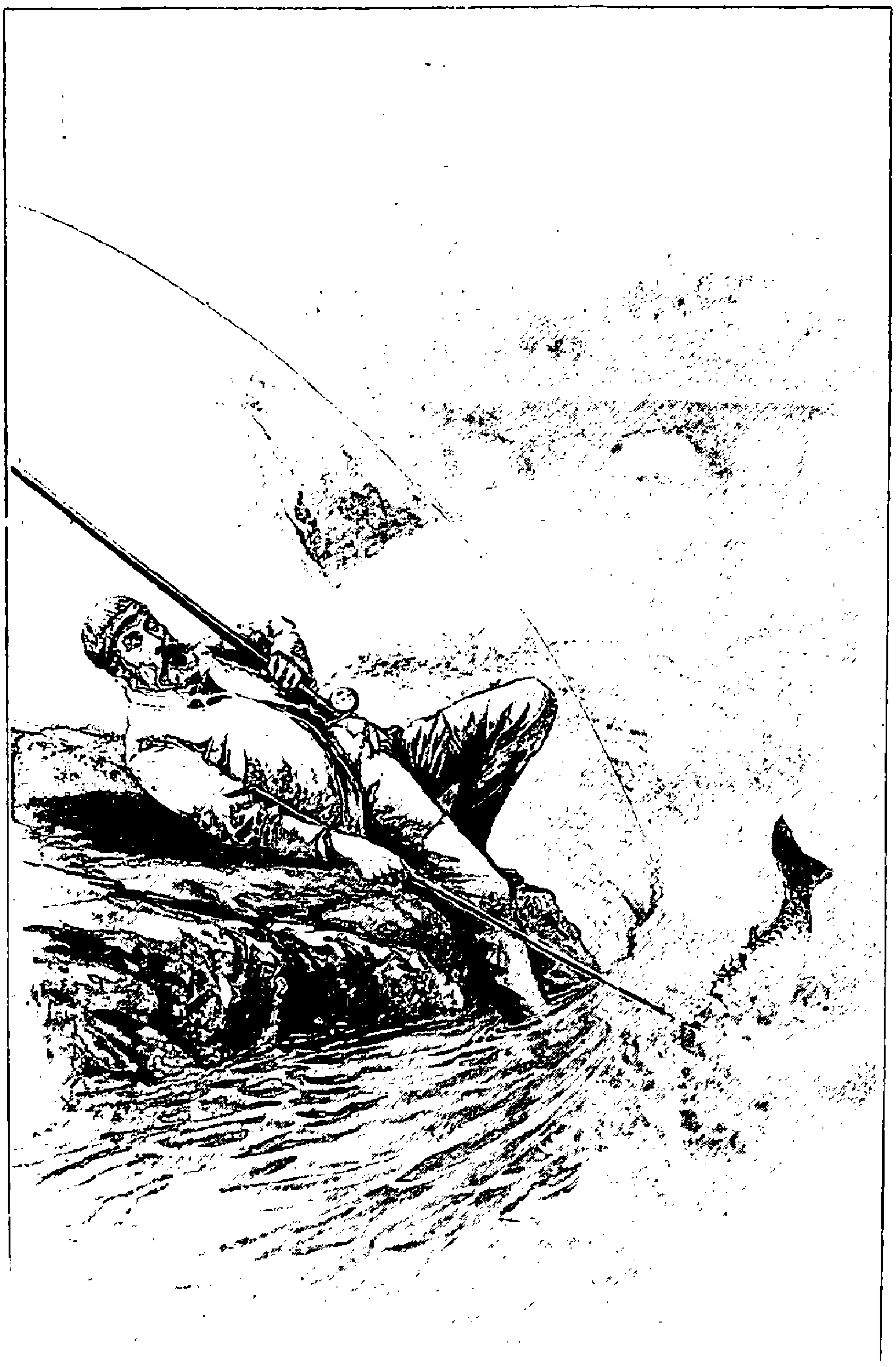
my friend was taking it easy. Throwing back the rod over my left shoulder, and tightening the strain on the fish as much as possible, I contrived with the right hand by sheer muscle to force the gaff down to the bottom, right under where he was lying—a depth perhaps of two and a half or three feet. A lucky stroke upwards did the rest at the first attempt. I shall never forget the rush that fish gave. For an instant or two it was 'pull devil, pull baker.' But, with the weight of water on him, four hands instead of one might have failed to haul him out. In the present case, it was perfectly evident that he on the contrary would haul me in. I felt I could not hold on another moment, and yet could not bring myself to let go; when suddenly the gaff twisted, I imagine, in the socket, cutting the line as it came away, and leaving me to struggle my way back to *terra firma* as best I could.

A long, deep, still pool, some two or three hundred yards long, stretched away below the fall, and down the bank of this I wended my way towards the next cast, in a sufficiently unamiable frame of mind. Suddenly my eye was caught by something that looked like a huge bar of gold wavering slowly with the current about mid-stream. I guessed in a moment that it was my late antagonist who, poor fellow, had gotten his death as well as his liberty. With an impromptu grappling tackle I succeeded after a few attempts in hooking and bringing him to bank. He was not quite dead, however, but still made a feeble fight, and was game to the last; like Hotspur—

> . . . in bloody state
> Rend'ring faint quittance, wearied and out-breath'd.

Another, somewhat ludicrous, incident of this sort occurs to my memory, although the successful party in the encounter was, I believe, on this occasion a pike. I say I 'believe,' because the whole of his body except his tail fin was deeply embedded in weeds from which it would have been impossible to extricate him by any legitimate method.

It was on the Hampshire Avon at Summerley, the beautiful



'PULL DEVIL, PULL BAKER'

seat of Lord Normanton, to whose courtesy I have been indebted for many a charming day's pike fishing, that the in cident in question occurred. My trusty friend and *alter ego*, Mr. Darvall, and myself, with Lord Normanton's fisherman, Tizard, were paddling our way slowly down stream in one of the small Avon punts, when we suddenly caught sight of this TAIL, 'broad as the baldrick of an earl,' gently undulating in an opening in the water lilies. The fish was evidently a huge one; the chance of tempting him to be caught *secundum artem* was *nil*; Tizard earnestly assured me his master was most anxious to have a large pike for the table—and so—I yielded to the tempter. . . . The boat glides noiselessly down to the unconscious *esox*, and now the gaff is steadily but surely stretched over the spot where leviathan's shoulder is likely to be, giving him an imaginary length of about four feet. . . . *Whish!* There was a rapid 'stroke,' a plunge, and with a rush sufficient to have upset a whale boat the stricken monster dashed for the bottom of the river, at that point at least twenty feet deep.

It was an exciting moment. I found myself being pulled incontinently over the boat's side, which was taking in water freely, and clutched at the nearest available support, which happened to be the seat of the keeper's corduroy nether garments. It came bodily away in my grasp. . . . At this juncture nothing, as I believe, could have saved the boat from capsizing, if the gaff, yielding to the excessive strain, had not first twisted in the socket and then *straightened out*—thus, of course, releasing the enemy, who, though deep struck, may, I would fain hope, have yet survived the indefensible attack made upon him, *contra bonos mores*, and lived on to attain a still greater age and a yet vaster breadth of tail.

Tizard, the keeper, was the only one who did not laugh heartily; but on a hint that we should contribute to his next tailor's bill his countenance resumed its wonted serenity. *Some of us* on the occasion had certainly, however, a narrow escape of being drowned . . . and the verdict of all good pike fishers would doubtless have been—'and serve them right.'

While I am on the subject of my poaching experiences let me make a clean breast of it and relate how, when a young man, reading at a tutor's on the banks of the Thames, my finer perceptions were on one occasion blunted, and my better feelings done violence to, by the sight of a splendid specimen of *Esox lucius* in one of the stew ponds of Mr. Williams, of Temple, the then member for Great Marlow. That morning I had seen him (the pike) lying basking, and in the afternoon (I can hardly tell to this day how it could have happened) I found myself, for some unexplained reason, standing by the side of the aforesaid stew pond, and wondering whether anyone would see through the surrounding withy beds, topped by a notice board threatening legal pains and penalties against trespassers? What is still more inexplicable, I carried in my hand an extra long sort of walking stick—or, shall I say it at once? *hop pole*—and in my pocket a coil of what certainly bore an external resemblance to copper wire. A couple of feet of this wire had somehow got on to the end of the hop pole, whence it dangled in such a manner as almost to deceive the eye into the notion that it was not altogether unlike the abomination commonly known amongst certain persons of impaired moral perception as a noose or 'sniggle.' . . . Hop pole in hand, I bent carefully over the water and reconnoitred the position of my friend *Esox*—merely in order, of course, the better to admire his majestic proportions, as he supported his huge body on his ventral *pinnæ*, and 'feathered' the water with his pectoral and caudal fins.

'A delicate monster, truly,' I observed, 'quite an ichthyological study.' And simultaneously an uninitiated spectator might have imagined that the appearance of the noose aforesaid passed gently but quickly over his head and shoulders. . . . There was a curious sudden commotion in the water; and at the same moment a rustling in the withies behind—and then a well-known voice (being, in fact, that of Mr. Williams' head water bailiff and fisherman) was heard, in accents the sarcastic tones of which I shall never forget, observing: 'Well, Mr. Pennell, this 'ere *be* a pretty go!'

'Confound you,' said I, furious with conflicting emotions, 'you've made me lose him—a twenty-pounder if he was an ounce!' . . .

'Well, what is to be done, sir?' was the next remark.

By this time my wrath had cooled down a little and I instinctively felt in my waistcoat pocket. It was empty.

'Unluckily, Edwards,' I said, 'I have left my purse behind.' 'Oh! never mind, sir,' was the reply, 'everyone knows your *credit's good at the Bell!*'

Peccavi! 'How sad and mad and bad it was'! . . . I should like to quote—if only to 'keep myself in countenance'—the confessions of Mr. Thomas Westwood (poet, and author of 'Bibliotheca Piscatoria'), which he makes in one of his charming angling idyls, the 'Lay of the Lea.' Not that I would

> Drag his frailties from their dread abode,

but merely that, as he is an old friend of mine, I should like to do my best to give his confessions the publicity that I know he would desire for them!

> Bobbing 'neath the bushes,
> Crouched among the rushes,
> On the rights of Crown and State I'm, alas! encroaching.
> What of that? I know
> My creel will soon o'erflow,
> If a certain Cerberus do not spoil my poaching.

The 'certain Cerberus' being, in fact, the Government water bailiff employed to look after the well-known Enfield Powder Mills. Still I must say Mr. Westwood's crime was of a far less heinous complexion than mine. He only fished, fairly, where—well 'where he didn't ought to'—whilst I . . . but let me drop the veil over these sad examples of human depravity, and come back to gaffing.

The 'queerest fish' that it ever happened to me—to gaff, I was going to say, but I remember that on this occasion it chanced to be to net—was a wild duck. Spinning one day

for pike on Loch Lochy I saw the duck—an overgrown 'flapper'—swimming not thirty yards from the boat. The idea occurred to me to try and cast over him, and after a few attempts I had the pleasure of seeing the bait settle gracefully across his neck. A 'gentle stroak,' as Nobbes calls it, and the next moment he dived, and, 'playing' like a veritable fish, never came to the top again till I had him at the side of the boat and passed the landing net under him. An hour afterwards he was roasting before a drift-wood fire on a spit of arbutus; and washed down with a glass of genuine 'Long John' he made a most excellent lunch. 'These to his memory!' . . .

It is wonderful what an appetite the air of a Highland Loch gives—a thing most excellent when one has the wherewithal to satisfy it; but I often think it must be 'hard lines' on the Gaelic tramps and gipsies—if there are any so far north of the country of 'Meg Merrilies' (Galloway). I once had myself the experience of a supperless tramp with a friend in these 'high latitudes,' and the recollection has by no means that 'enchantment' which 'distance'—we had covered some thirty miles of ground more or less—ought proverbially to lend. When it is getting dark and a man has distinctly lost his way in a country where there are no roads, and no visible population, it is the wisest plan to yield as gracefully as may be to the 'inevitable;' and if he cannot, like Mark Tapley, be 'jolly under circumstances,' at least to do the best he can for his bodily comfort, without waiting till he has taken the last mile out of himself, and left his physique too much exhausted to contend on fair terms with damp grass and night dews.

Acting on this view, we utilised our 'last mile' in 'prospecting'—and eventually made ourselves a fairly comfortable shakedown of heather under the shelter of an overhanging rock—*sub tegmine* fern-i. But now we began to feel the air-effect upon our appetites, and to remember that we had been on the go since breakfast and had eaten nothing. We were in fact starving! A raw turnip would have been a godsend, and

a dish of potatoes a wild delirium. But there was nothing for it, so we put on whatever extra in the way of garments we had in our knapsacks and turned in fasting. What my friend's dreams were about I cannot say, but mine ran on lakes teeming with fat luscious trout which came up to be caught of their own accord, and then, to save trouble, jumped spontaneously into the frying pan. Assuredly these visions must have been prophetic; for though we fondly imagined we had camped on a plateau of bare and unbroken moorland, when morning dawned the scene had been transformed as by magic,

> 'And on a sudden, lo! the level lake,
> And the long glories' of the rising sun!

The sight of water—and water doubtless containing trout—gave, as Ingoldsby says, 'a new turn to the whole affair.' I fortunately had my fly rod with me, so I left my friend to make a fire as best he could and

> . . . stepping down
> 'By zigzag paths, and juts of pointed rock
> Came on the shining levels of the lake.

Without stopping, like the bold Sir Bedivere, till 'both my eyes were dazzled,' I soon put together my rod and adjusted a cast of flies. Never before did I fish with such energy; never did I watch for a rise with such breathless attention! The first fish I hooked was a mere 'troutling'—little bigger than a gudgeon—who would at other times have been incontinently returned to the water; but circumstances being as they were I played and landed him and deposited him on the bank with as much care as if he had been a five-pounder. He was two mouthfuls at any rate. A friendly breeze, however, shortly afterwards sprang up, and with the 'long ripple washing in the reeds' a satisfactory repast was soon provided. . . .

Later on we discovered a farmhouse hard by the lake shore, and finding that the trout fishing in the Laggan and neighbouring Spean-water was excellent—we arranged to put up for a week with its hospitable inmates, and enjoyed really

first-rate sport, more than once being literally unable to carry home our spoils. I revisited the spot some years later, but whether I had incautiously betrayed the whereabouts of our 'happy hunting grounds,' and they had been invaded by tourists, or whether the trout thought they had done enough for me on my first visit, I cannot say, but the fishing was indifferent, not to say decidedly poor.

. . . . . .

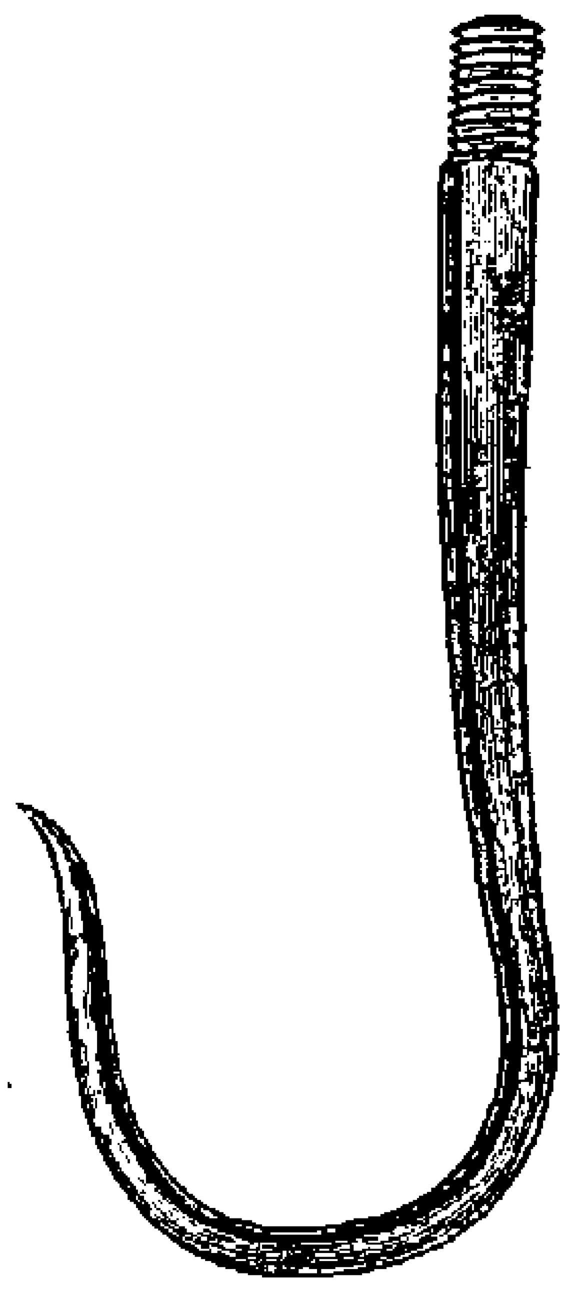


FIG. 1.
INCORRECT FORM OF GAFF.

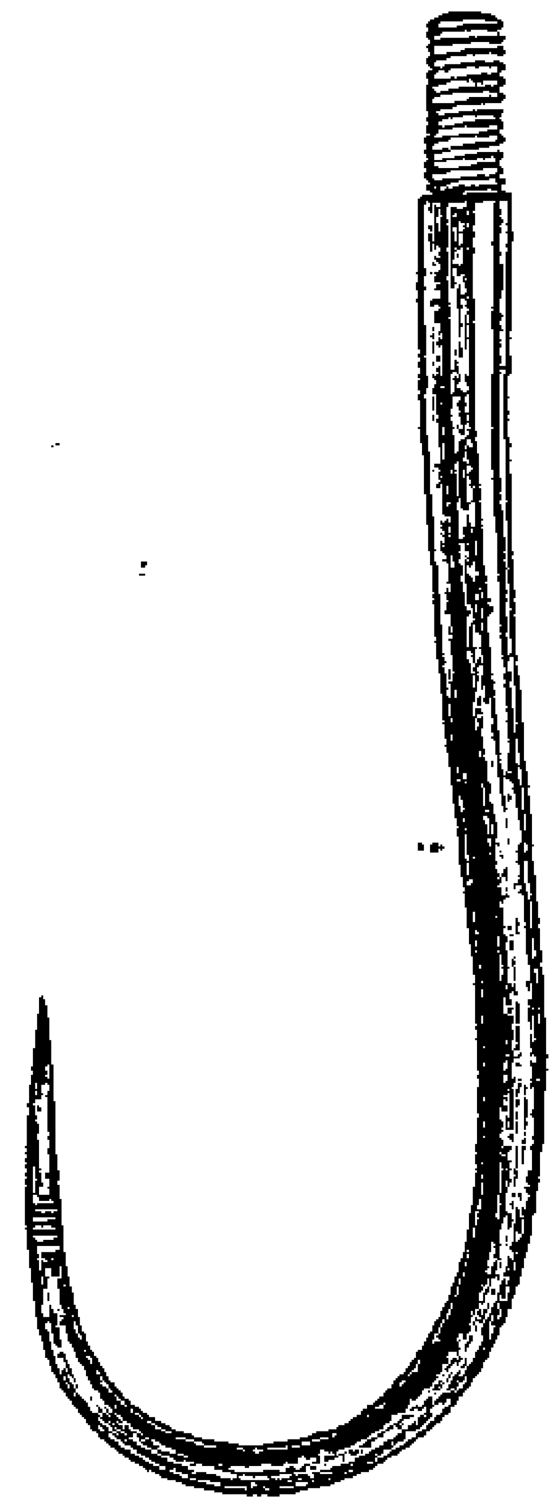


FIG. 2.
CORRECT FORM OF GAFF.

But where am I wandering to? I started at gaffing salmon, and I find myself now describing the catching and eating of half a dozen troutlings, whose united ounces would not have outweighed a Devonshire peel. . . . Let me for the sake of consistency finish where I began, and end this part of my notes on Tackle with a few practical hints on the subject of Gaffs and How to Gaff a Fish. To the novice, at any rate, they may not be altogether useless. And first as to Gaffs :

All sorts of mechanical deformities are manufactured, and sold in the tackle shops, as 'gaffs,' of which a good example is seen in the turned-out point of fig. 1—a facsimile of a gaff bought of a well-known London tackle-maker. Fig. 2 shows the correct shape, arrived at by the application of the same simple principles of mechanics already discussed in regard to ordinary fish hooks. [See also remarks and illustration, p. 91.]

The skilful use of the gaff, besides demanding special qualities, can only be acquired in perfection by actual practice, and circumstances 'beyond one's control' are constantly occurring which of necessity make their own laws, and the best-considered system inapplicable. The following are, however, a few axioms that can be safely formulated as general guides.

1. Never thrust your gaff forward until you are prepared to strike, and never make any half-attempts. These feints generally scare the fish and not unfrequently cut the line.

2. Under *ordinary* circumstances do not attempt to gaff a fish that is more than a foot below the surface, or until he is pretty fairly spent. The best position is when he is 'broadside on,' but often, of course, you must gaff whenever you can.

3. The 'proper' place to gaff is between the head and the back fin.

4. The critical moment having arrived, rapidly, but at the same time steadily, extend your gaff over and *beyond* the back of the fish, bringing it gently down upon it as it were. Then a short sharp jerk from the wrist and elbow will drive in the gaff without prematurely frightening the fish or endangering the tackle.

After landing the fish, whether by net or gaff, the next point is to carry him.

If the catch be a good one, especially of salmon, it is practically out of the question for the fisherman to carry them himself from place to place and fish at the same time. '*Necessitas non habet* legs,' as a friend of mine once dog-latinised it, and these conditions are, of course, also a law unto themselves.

In trout fishing, or where the spoils are not likely to be weighty, the fly-fisher, and still more the worm-fisher, will pro-

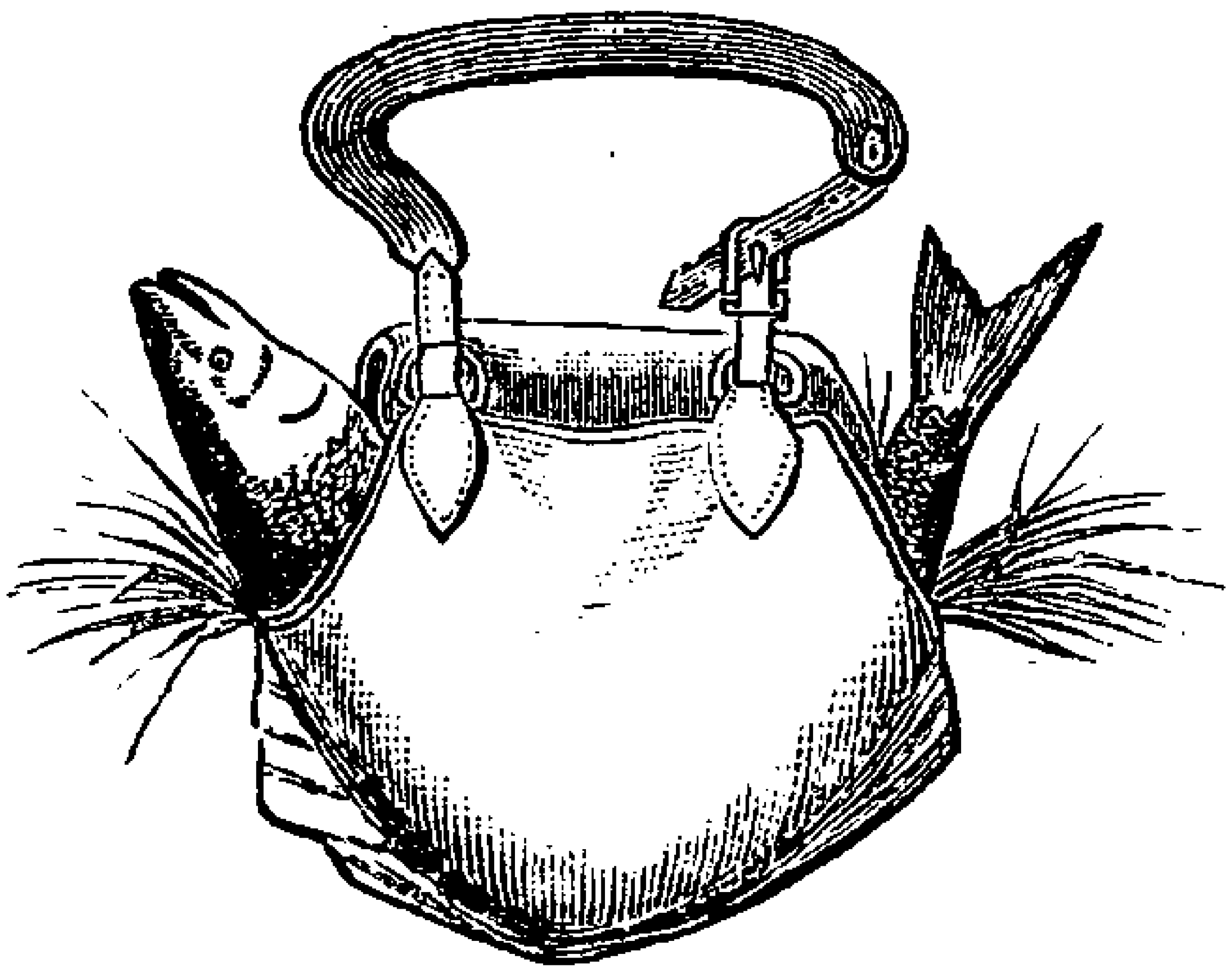
bably very often have to carry his fish himself. For this purpose bags and baskets 'many and great' are sold at the tackle

THE FREKE BAG.

A convenient-sized. Freke bag for the ordinary purposes of the trout fisher is about 1 foot 7 inches wide by, say, 14 inches deep. The weight in this size should not exceed 1 lb. 10 oz. The shoulder strap—or rather webbing, for leather 'soddens'—should be 2 inches wide, and in larger sizes 2½ or 3 inches. A 'Carry-all' basket (see page 104) of something like corresponding capacity weighs 3 lbs.

shops, but that they are most of them defective in some points in which they might have been perfected, goes without saying. In fact, as regards the bags (which for ordinary purposes I always use myself), I have found them mostly to suffer the disability of coming to pieces—if not the first time they had a good catch to carry, at any rate, after, say, a few days or weeks of real hard wear and tear; others, again, let the slime and drippings ooze through. After trying various patterns, including one of my own, figured in the first edition, I am disposed to think that for combined strength and simplicity, and taking one day's fishing with another, nothing beats, or perhaps equals, the 'Freke bag,' as it is called, which is, or should be, *made double*.

That is, there are two bags, in fact, buttoned together at the side edges : one bag, of strong waterproof cloth, fitted with a flap, and the other—the inner one—with the mouth left open, so to speak, although kept practically closed when carried by the combined action of its own weight and that of the shoulder-straps passing through two metal rings at the top. One of the bags can be used for carrying fish, the other for



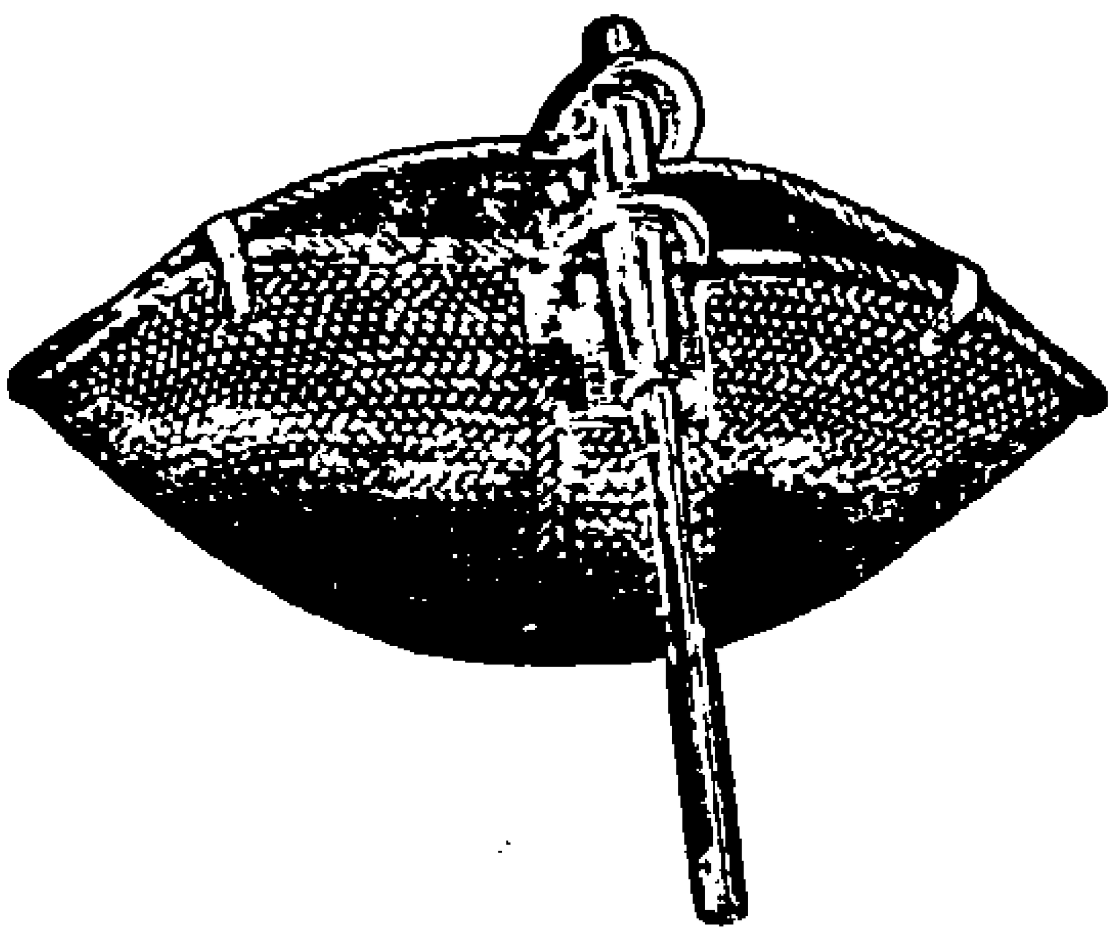
THE FREKE FISHING BAG.
(Another illustration, carrying a fish.)

tackle, lunch, &c. ; or, at a pinch, both may be used for fish. The bag without the covering flap is moreover so constructed that if an unexpectedly large fish be caught its head and tail will project through the openings left at the top of the sides.

The 'Usk' basket, made by Farlow, which is carried over the shoulder of the attendant by means of a stout handle, some two feet long, resting on a leather shoulder-pad, is the best special arrangement I have met with for the purpose. A basket of this form 32 inches long by about 15 deep will carry half-a-dozen moderate-sized salmon or pike comfortably—the comfort including that of the attendant, on whose shoulders the mechanical adjustment of the crutch or handle, having a soft leather shoulder-pad under it, makes it sit as lightly as possible.

In deciding upon the question of basket or bag I personally

prefer the latter in every respect but one—when you have caught nothing it exposes the nakedness of the land!



THE 'USK' BASKET.

Some fishermen consider that the 'appearance' of the fish is better preserved in a creel or basket, than in a bag in which they are liable to be occasionally squashed or squeezed out of

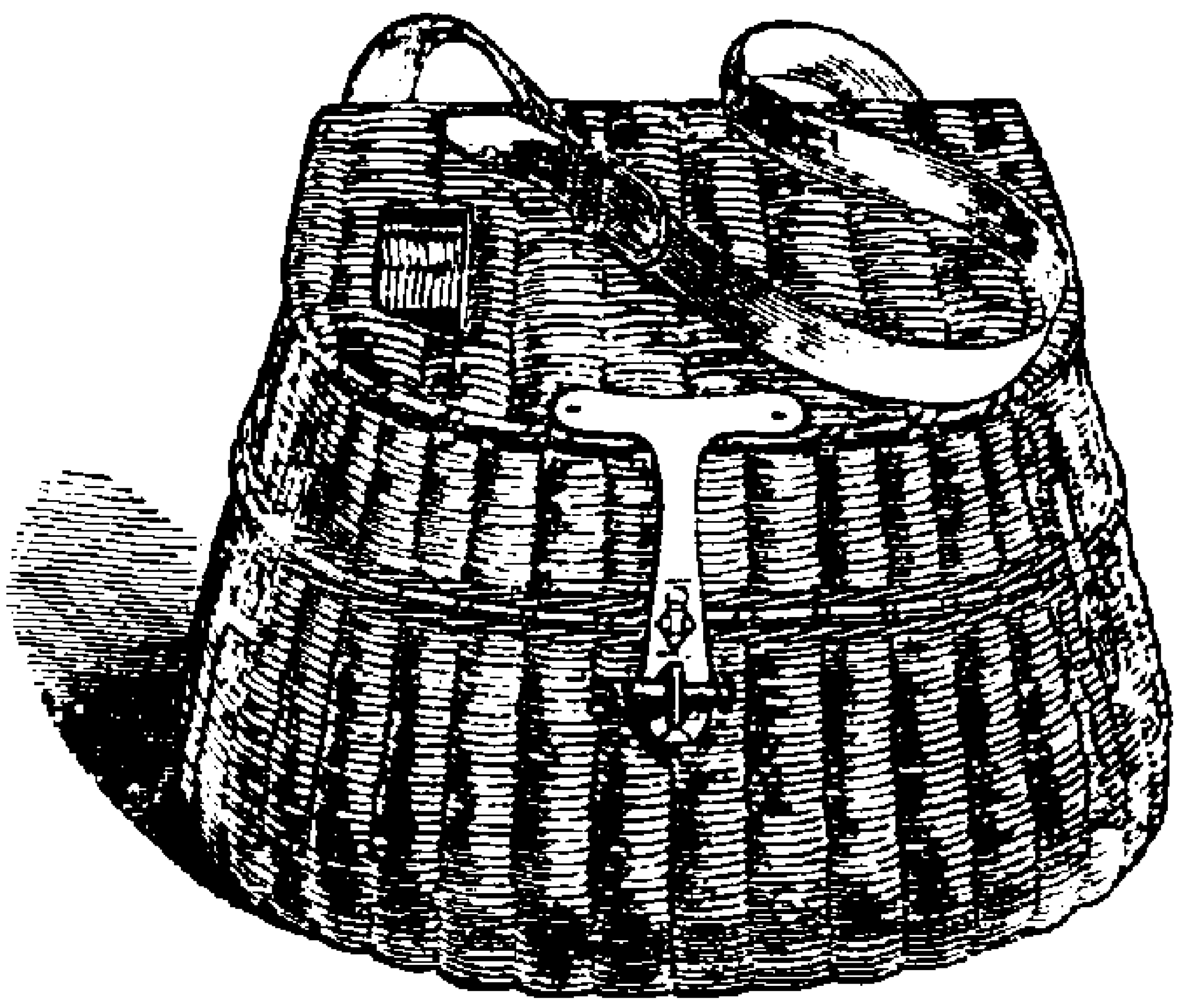


FIG. 1.—'CARRY-ALL' CREEL.

shape. Each of the following creels contains some commendable features of novelty.

Fig. 1 represents what is known as 'Hardy's Carry-all

Creel.' It is made, it will be observed, in two pieces or compartments, the object being to carry the fish in the lower, and the luncheon, tackle box, &c., in the upper part.

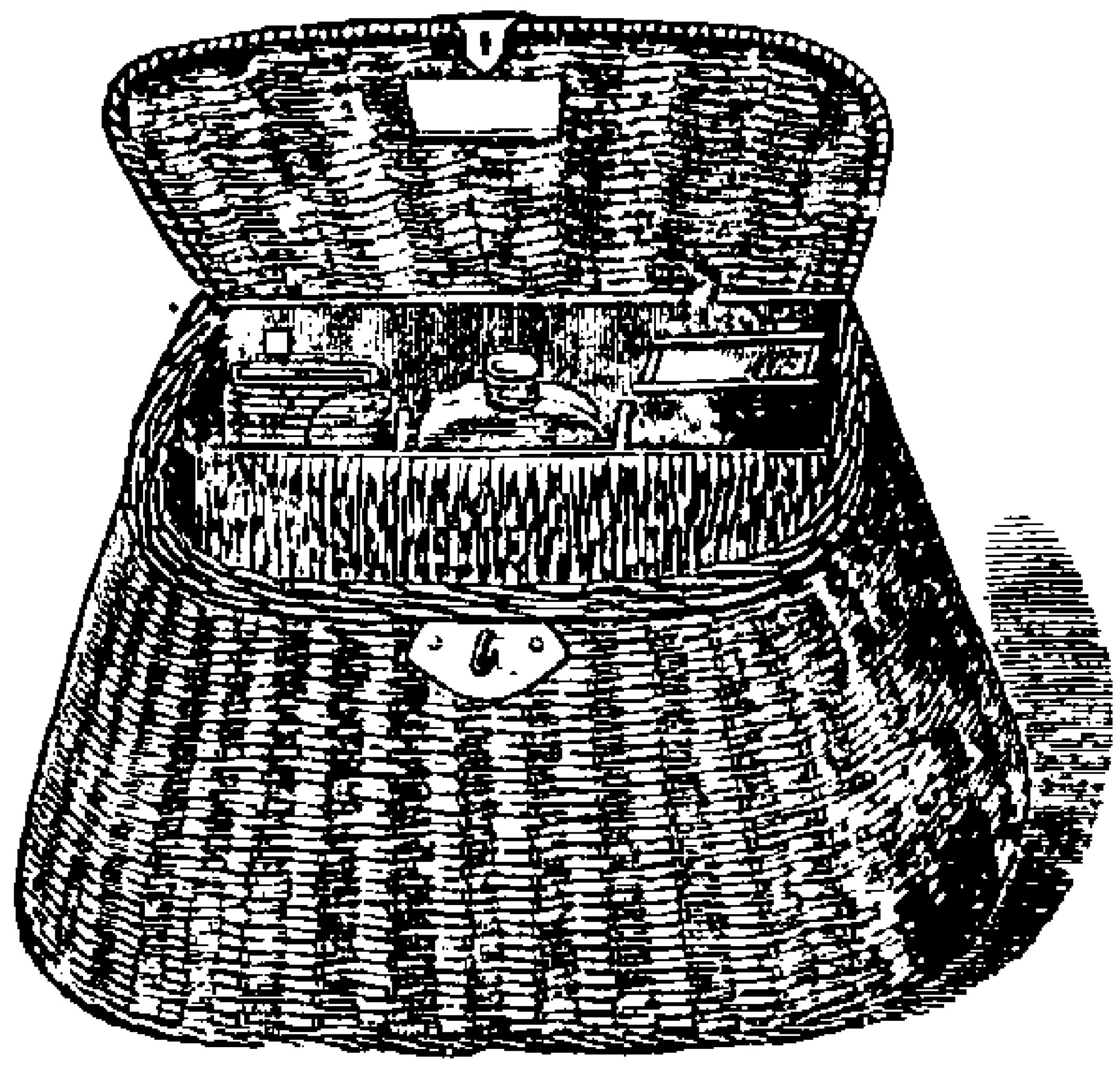


FIG. 2.—FARLOW'S CREEL.

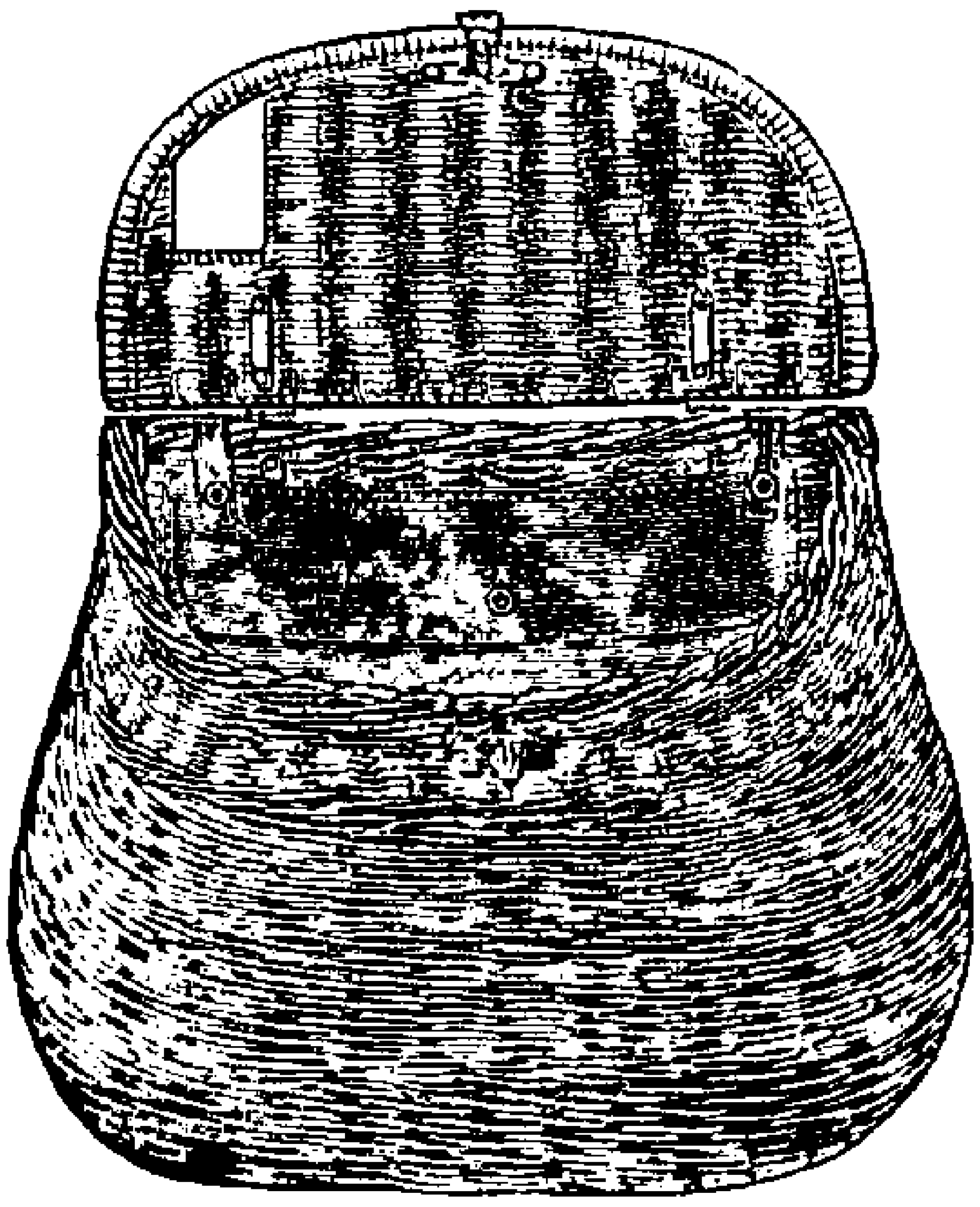


FIG. 3.—CREEL WITH INSIDE LUNCH AND TACKLE BAG.

Fig. 2 is a creel intended to embody the same idea, and brought out by Mr. Charles Farlow, of 191 Strand. In this

creel the space for stowing away the tackle &c. is made by a double back, the lunch case, book, and flask being fitted into the spare compartment in the position shown in the engraving. In this latter creel an innovation has been made in the way of the carrying apparatus (see Vol. II., appendix.)

Fig. 3 is another creel made by the last-named firm, in which the same idea is carried out in a different way. The ordinary form of creel or pannier is too well known to need comment.

Following up the subject of the fly-fisher's equipment, let me strongly advocate the use of waterproof boots, stockings, or trousers whenever wading is really necessary. When it is not indispensable several self-evident advantages are presented by fishing from *terra firma*. But by getting wet and remaining so are engendered many of the after ills that flesh is heir to, in the shape of rheumatisms, neuralgias, varicose veins and what not, which when 'wild youth's past,' are apt to remind the veteran of his early indiscretions. I formerly suffered a small martyrdom myself from lumbago—the result of 'fairy follies' in the wading line when I was still in my 'teens, and used to look forward to a sort of amphibious existence for eight or ten hours as 'half the fun.' To have unfrolicked such fun I would since have given something considerable. . . . *Ergo*, don't make a practice of going into the water without waders.

In the matter of material for waterproof boots, &c., there is a plethora of choice, and 'scope and verge' enough for the most fastidious. It matters little, really, whether the waders be of waterproof cloth or leather, or felt or leather india-rubber coated, so that they keep the legs dry and have plenty of nails. Of 'felt soles' I have had no practical experience; but I know that a scientific distribution of sharp-cornered nails will add greatly to the security of the foothold in deep and swift water.

It is astonishing, by the way, what 'heights and depths' one can 'negotiate' in safety with a salmon at the end of the line—places which it would be sheer madness to attempt in cooler blood. I recollect once when fishing the Roughty, near Kenmare, getting my fish fast round a stone under the opposite

bank. The river at the point was about forty yards wide; deep; and the water discoloured by a fast rising flood; nevertheless by dint of jumping, and striding like the Rhodes Colossus from point to point of rock, submerged or projecting, I managed to get across to the other side; *sed revocare gradum?* . . . After killing my fish, a very fine fifteen-pounder with the tide lice on him, I was fain to walk a good three miles round before I could find a fordable place.

Talking of the Roughty reminds me of a gallant and enthusiastic salmon fisher 'quartered' in the neighbourhood at the same time that I was. The Major was remarkable for his steady absorption of 'poteen,' which he invariably carried, when fishing, in his pocket in a soda-water bottle. On one occasion whilst following fast after a fish that was tearing down stream he successfully cleared a post and rails—successfully, that is, as far as the fence was concerned; but his activity cost him dear, for the sacred soda-water bottle, flapping about in his coat-tail pocket, jerked up as he jumped, striking him in the mouth and knocking two of his front teeth clean out. The Major's language was a thing to be remembered—or rather forgotten! . . . But the Roughty was a real sporting river, and many a break-neck scamper I have had along its channel—pity it was so netted and poached.

I could fill pages, as no doubt most salmon fishers could, with anecdotes of escapes or catastrophes in the wading and ducking line: personal explorations plummet-wise of widths 'obvious' but depths 'uncertain'—trifling errors in hydrostatics on the force of currents—unsuccessful 'negotiations' of the 'water jump,' &c. &c. For such emergencies wading trousers are decidedly preferable on many grounds to boots or leggings. They are also, I believe, far less dangerous, as, in case of having to swim for it, instead of getting instantly filled with water, the latter takes a 'measurable' time to make good its entry. An impression used to prevail that in case of sudden immersion the trousers would buoy up the legs at the expense of the head—the latter performing the office of a sort of plummet, and of

course, barring accidents, involving a certainty of drowning to the wearer. Actual experiment has, however, completely exploded this fallacy. Mr. John Lloyd, junior, who published a letter on this subject in the 'Field' of September 7, 1867, tested the question in a highly practical manner.

'I put on my wading trousers,' he says, 'reeving the string at top as usual round my waist, and dived head foremost into deep water. The result agreeably surprised me, for I found that my legs were gently buoyed up in a horizontal position near the surface of the water, while my head was well above it, and I could use my arms freely in swimming.

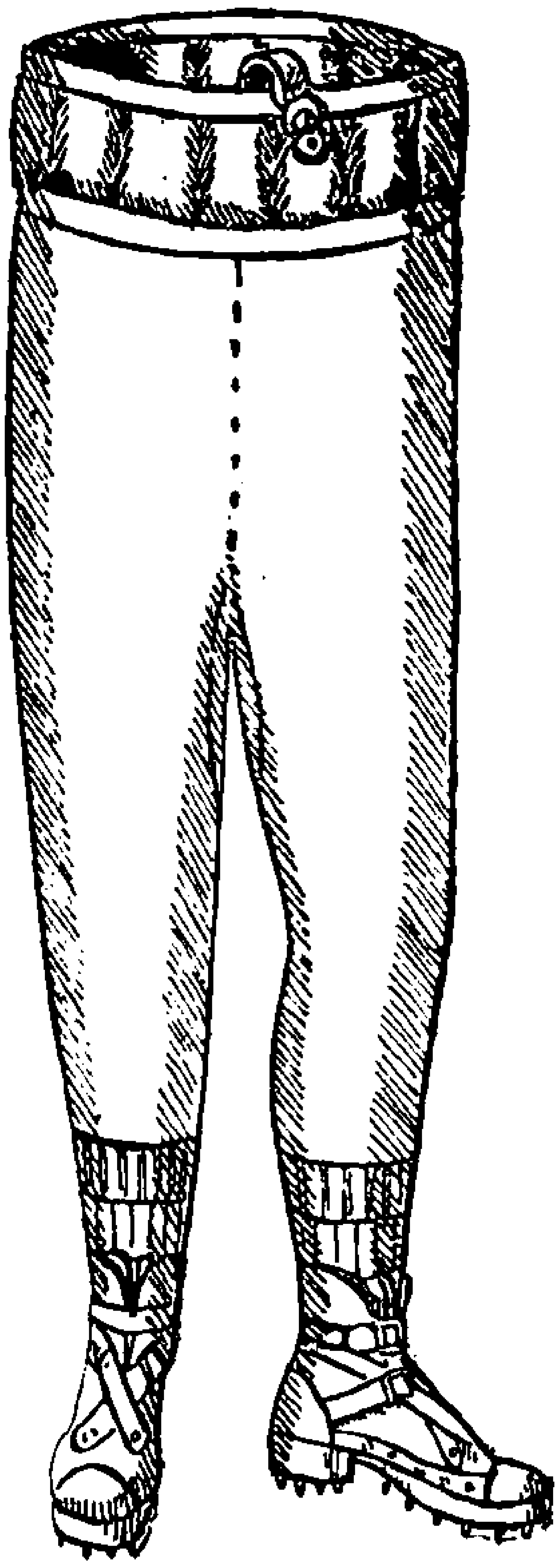
'I swam with the greatest ease for about fifty yards, and it was not for some minutes, and until the water had found its way between the reeving string and my body into the trousers, that I felt any inconvenience from having them on. My legs then began to get heavy, and more depressed in the water, but not so as to prevent my swimming easily.

'I am convinced, therefore, that there is no danger in using fishing trousers; on the contrary, if reeved pretty closely at the top, they will act for the first five minutes positively as life buoys. It is not until after they fill with water that they become dangerous. To prevent this, therefore, as long as possible, it is in all cases most advisable to reeve the trousers tightly round the body; you can thus confine the air and exclude the water.

'The same may be said of fishing stockings and wading boots; a reeving string round the thigh would in these have the same beneficial effect.' [The above experiment was in still water.]

To 'make assurance doubly sure,' however, waders are now manufactured by Messrs. Cording, the well-known waterproofers, of 125 Regent Street, with an air-inflated edge—a sort of 'life-belt trousers,' in fact—which enable the wearer to face all contingencies of the drowning category with perfect equanimity.

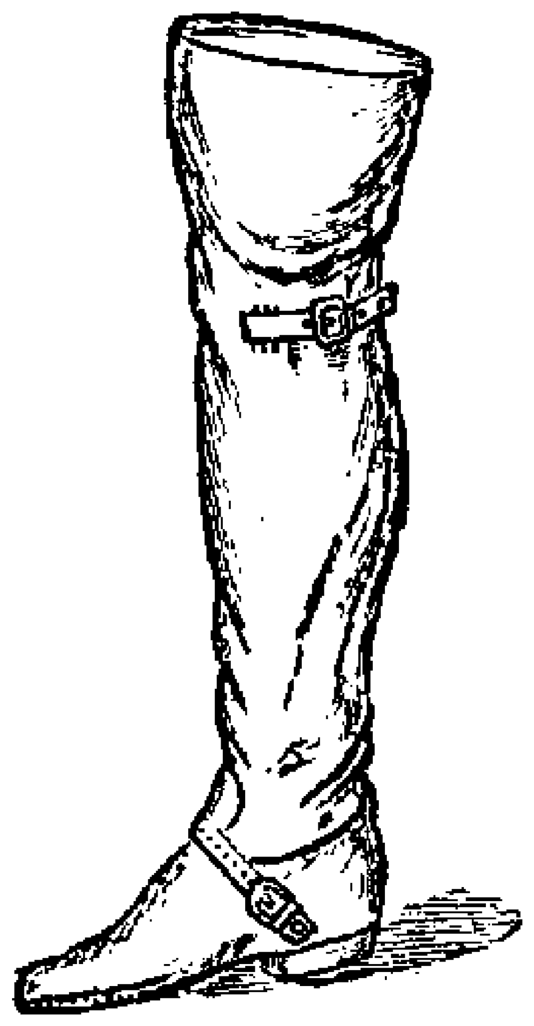
For these the makers obtained a medal at the Fisheries Exhibition. The 'life-belt' part of the affair consists of a tube about six inches wide when lying flat, 'inflatable' at will, which comes under the arm-pits, being attached to, and forming part and parcel of the waders.



CORDING'S LIFE-BELT WADING TROUSERS.

One further hint : *the higher the trousers come up the better.* Neither the ordinary wading trousers, nor stockings, however (nor their equivalent in leather boots), fulfil adequately a need which I have constantly experienced myself, and which I suppose, therefore, other fishermen have also felt : namely, a nether garment, that one can 'paddle about with' in wet weather, wet grass, and (if occasion requires) do a little extempore wading in, without encumbering one's movements with the ordinary waders or boots, which, whatever their other

merits, are a serious hindrance to locomotion, and, in the case of the less robust (owing to their weight), a tax on the physique which is almost prohibitive. In Hampshire, for instance, where 'water-meadows,' periodically inundated, form the usual river borderings, a pretty constant state of dampitude is likely to be the condition of the lower extremities of the unwater-proofed' pike-fisher or fly-fisher. Then there are the 'drawns,' or shallow watercourses—sometimes dry, but more often 'flooded,'—and draining into the main stream, where to cross, unfurnished with something in the shape of waders, is, of course, to insure a ducking at least to the knee, and to 'turn the flank' of which by a succession of strategic movements to the front and rear involves much waste of time. Bearing in mind the *caveat* I have already entered in the earlier pages of this chapter against the cultivation of damp legs, on the ground of stored-up rheumatisms, &c., I lately had made for myself a sort of 'half' waders, not so cumbersome nor quite so long as the ordinary wading stockings or boots, but long enough to make me independent of watery impediments so far as flooded meadows and irrigation conduits are concerned, and which at the same time are so light and comparatively cool as to be no hindrance to locomotion. These aids to the amphibious have been christened 'Over-Knee Waders,' and, as their name expresses, they come well up five or six inches above the knee, below which again they fasten with a buckle-strap (*vide* cut).


OVER-KNEE WADERS. (Registered.)

By this arrangement I get rid of those inconvenient appendages, waist or shoulder straps, by which the ordinary wader is suspended, at the same time reducing the weight and transferring the point of suspension to its more natural situation below the knee.

The 'leg-part' of the Over-knee waders is of fine, but at the same time perfectly waterproof, material—like that of ordinary

wading stockings, but very much lighter—and this is continued at the foot under light buff leather boots, kept in position by a strap across the instep. The 'sum tottle of the whole,' as Mr. Hume used to say, is that whereas a similar pair of ordinary wading stockings and boots (coming up only an inch or two higher) weigh between five and six pounds—more often nearer six than five—the Over-knee waders are, for a man of six feet, *barely over three pounds*—not much more than one half, and little, if at all, in excess of the weight of an ordinary pair of shooting boots. There are many anglers, not quite so young as they used to be, to whom the weight of the orthodox waders is almost prohibitive; and there are many others who, though like myself, quite up to 'carrying weight' when really necessary, object to doing so when no real necessity exists. And all this holds good just as much in the case of the Trout-fisher as the Pike-fisher. Perhaps, indeed, even more; inasmuch as, whilst the enforced wadings of the one are more or less exceptional and intermittent, those of the other are the normal conditions of his sport. I often think that the question of 'weight-carrying' in the matter of dress and equipment generally is less studied than it ought to be by sportsmen. A man will give fifty guineas more for a pair of Purdey guns, because they weigh perhaps a few ounces less than a pair by some other maker—with, as he believes, an equal chance of safety to his head—and he knows by experience how those few ounces will 'tell' towards the end of a long day's tramp over a grouse moor. In all this he is, so far as *avoirdupois* is concerned, perfectly right—but why does he not go a step further and devote a little attention to the weight of the other portions of his equipment? Why, for instance, will he allow his bootmaker to put nearly a pound more into his shooting boots than is really necessary? As I have said, the weight of the latter is usually not far short of three pounds, whereas, two pounds is nearer the weight that is really necessary, if the bootmaker is anything of an artist in his business. By using one very thick and solid piece of leather for the sole, and

thinner leather than usual above the foot (where thickness is not needed except by those with weak ankles), I get my shooting boots down to the weight indicated, without any sacrifice that I have ever been able to discover either on the score of 'water-proofness' or durability—but then my bootmaker, Moykopf, of the Burlington Arcade, *is* an artist.

The manufacturers of the Over-knee waders are Messrs. Anderson, Anderson and Anderson, 37 Queen Victoria Street, E.C.

As all waterproof garments are liable to become more or less damp from repressed perspiration, they should invariably be dried after use, as well to prevent the linings, and, indeed, the rubber itself, becoming rotten, as for purposes of health and comfort. The best way of drying is to fill the legs and feet of the boots, stockings, or trousers, with warm bran, oats, or barley, *which should be shaken out as soon as it begins to cool* (if this precaution is not attended to the moisture which has been absorbed begins at once to re-evaporate). When the waders have been emptied of their drying contents they should be turned inside out and hung up, foot upwards. In the case of the combined rubber and leather boots noticed, this (of course) cannot be accomplished, and many fishermen keep the 'feet-part' always filled with carefully dried grain or sawdust, or on boot-trees, with the object of swelling or keeping them in shape, and to avoid shrinking.

Whenever waders are used, thick warm woollen stockings, and leggings also if possible, should be worn inside. I used always to wear and recommend for this and other sporting purposes the all-wool garments made by the well-known Jaëger Company, but my patience has recently given way before the combined inconveniences of excessive *shrinking*,—which I suppose in their otherwise excellent manufacture is inevitable —and the inconvenient forms in which they seem determined to thrust an essentially good idea down the public throat. Shirts doubled over the chest rather than (if anywhere) over the back, and buttoning up at the side instead of in the front

—woollen neck-bands which contract into 'chokative' dimensions the first time they are washed—and so on; until one feels at last inclined to start a rival company, and call it the 'Jaëger system stripped of fads and made possible for ordinary mortals!' . . . As, however, I still feel under obligation to Dr. Jaëger for his capital idea—from which, all drawbacks notwithstanding, I have derived much advantage—I tried instead what could be done in my own small way for my personal comfort, by persuading another firm—Messrs. Harborrow, of Cockspur Street—to take up the manufacture of 'Jaëger shirts,' and so forth, on principles free from the inconveniences alluded to. The very slight admixture of cotton in the 'webbing' of the material, which they use at my suggestion, is practically preventative of shrinking, and makes on the whole, I think, a more agreeable and equally healthy garment, whilst, as I say, I can now get my fishing and shooting dress in a form which gives me the advantages of the Jaëger system without its eccentricities.

A propos, I cannot imagine why some more simple and convenient style of dress has not long ago been adopted by 'lady fishers,' as well as by anglers of the sterner sex. Many ladies who now would never dream of approaching the river bank (nearer than the towing path) for fear of spoiling their dresses or wetting their shoes, would if suitably 'apparelled' find as keen an interest and enjoyment in the sport as we do, and might even become enthusiastic votaries of the gentle art. How charming it would be when we sally forth after breakfast to lake or stream, to have the companionship of some 'sweet girl graduate,' who, with hair either golden or otherwise, would by her graceful companionship double the pleasures of success! There would be no slovenly casting, no calling to halt for pipes or liquor when fish were on the rise then.

> Fight on, brave knights! Bright eyes behold your deeds,

written of the 'free and easy passage of arms' of Ashby de la Zouche, finds its modern parallel in the hunting field, the polo ground, and the rifle tournament, in fact, wherever youth and

ambition meet in the presence of beauty to try who is the best man. From this category no one who has watched the keen interest with which the spoils and incidents of the day's chase are discussed at the dinner table, and the number and magnitude of each man's 'bag' appraised, can except the 'knights of the angle.' There are indeed already not a few angling champions of the gentler sex who now enter the lists, especially as fly-fishers, and amongst whom the fair daughters of a well-known noble Duke have acquired enviable fame.

We are not all, however, so lucky as to have a salmon river at our door, and I have often thought, watching some modern Dame Juliana punt fishing under the dip of a Thames chestnut tree in August, or later in the autumn sending her spinning bait skimming into the foam below Hurley weir, how much of pleasure, now lost to most of us, is gained by the man whose wife takes heartily to fishing or hunting or whatever other field sport he is devoted to. In this way she becomes not only his helpmate at home, but his 'chum' and true comrade when on his rambles by flood and field, or, rifle in hand, mounting the 'imminent deadly breach' which is shortly to witness the campaign against chamois or red deer.

Not that shooting is a sport by any means so naturally fitted to women as fishing. Their figure makes the handling of the gunstock always rather awkward, and the recoil is sometimes apt—unless very light charges are used—to be dangerous. But to fishing there is no drawback, unless, indeed, it be the petticoats with which some thick-ankled leader of fashion in bygone times has managed to cramp and disfigure one of the prettiest parts of the human form. No skirts will vex the tameless ankles of our women of the future. Already there is a marked and healthy improvement visible in the length of the dress, and women need no longer draggle about behind them a ridiculous and often muddy train, which if it does not do duty for a road-sweeper cannot certainly be shown to subserve any other useful purpose.

The influence of dress has been recognised by many philo-

sophers as exercising a powerful effect in moulding the national character, and I am quite satisfied that if English men and women, and those living in town as well as in the country, were to adopt a dress allowing greater freedom and play to the limbs and muscles, and (so far as men are concerned) would discard, once and for all, chimneypot hats, frock coats, leg bags —I use the term literally, not in a slangy sense—and the other paraphernalia of the bandbox, there would be a marked advance in the manliness and 'robustness' of the race.

Women who shoot or fish should never hesitate to wear a dress suitable for the purpose; long skirts are not only constantly in the way, but often prove a source of real danger to the wearer. The same remark holds still more true in regard to long riding habits, and if the readers of these lines had seen as many accidents, and hair-breadth escapes from accidents, in the hunting field, as I have, owing to long skirts, they would join in the outcry which ought, in the name of common sense, to be raised against them. However, I am glad to see that there is some improvement of late years in this respect also.

In arranging a lady's fishing dress, next to the short skirts thick boots more or less waterproof are the most important item, having regard both to protection and comfort; but this is precisely the point on which the male adviser finds the greatest difficulty in procuring a favourable hearing for his views. Simply on the score of 'prettiness' it cannot be said that a stout double-soled shooting or fishing boot is as killing as a Queen Anne slipper, Louis Quatorze shoe, or a pair of dainty *bottines*, expressly designed to set off and emphasise the delicate arch of the instep, whilst displaying the foot and ankle in a position which, if not quite natural, is at least exceedingly picturesque.

The flower she touched on, dipp'd and rose,
And turned to look again.

But, my dear lady readers—if I should be so favoured as to have any—do not let it be forgotten that there is 'a beauty of fitness,' and that where really rough work has to be done 'ease

before elegance,' and, it might be added, 'health before both,' is a golden maxim.

The following hints for dress, which have been kindly given me by a lady who has had large practical experience with both rod and gun, may possibly be found of service:

Short skirt of linsey wolsey made as simple as possible—in fact, a kind of 'housemaid's dress.' Norfolk jacket made of all-wool material. A comfortable toque (the close-fitting toque does not catch the wind). It is best to have the costume of one colour, say a nice heather mixture or whitish grey. I advise 'linsey' for the skirt, as it is everlasting in wear, and the 'all-wool' for the Norfolk jacket, being warmer and more healthy.

Now for the most important item—boots. They should fit perfectly, and be made of porpoise hide, with honest broad soles and plenty of room for the toes, and flat heels—in their proper place, *not* under the arch of the instep. The boots should lace in the same way that men's shooting boots do, and be made to come well up the leg (so that gaiters can be dispensed with). Length of skirt an inch or so above the ankle.

This dress is suitable for either fishing or shooting. If worn for the latter over a 'clayey' country, a few inches of light waterproof on the bottom of the skirt are advisable. Some ladies wear gaiters, but I think if the boots are made high enough they are not necessary. Woollen under-garments should be worn, from stockings upwards.

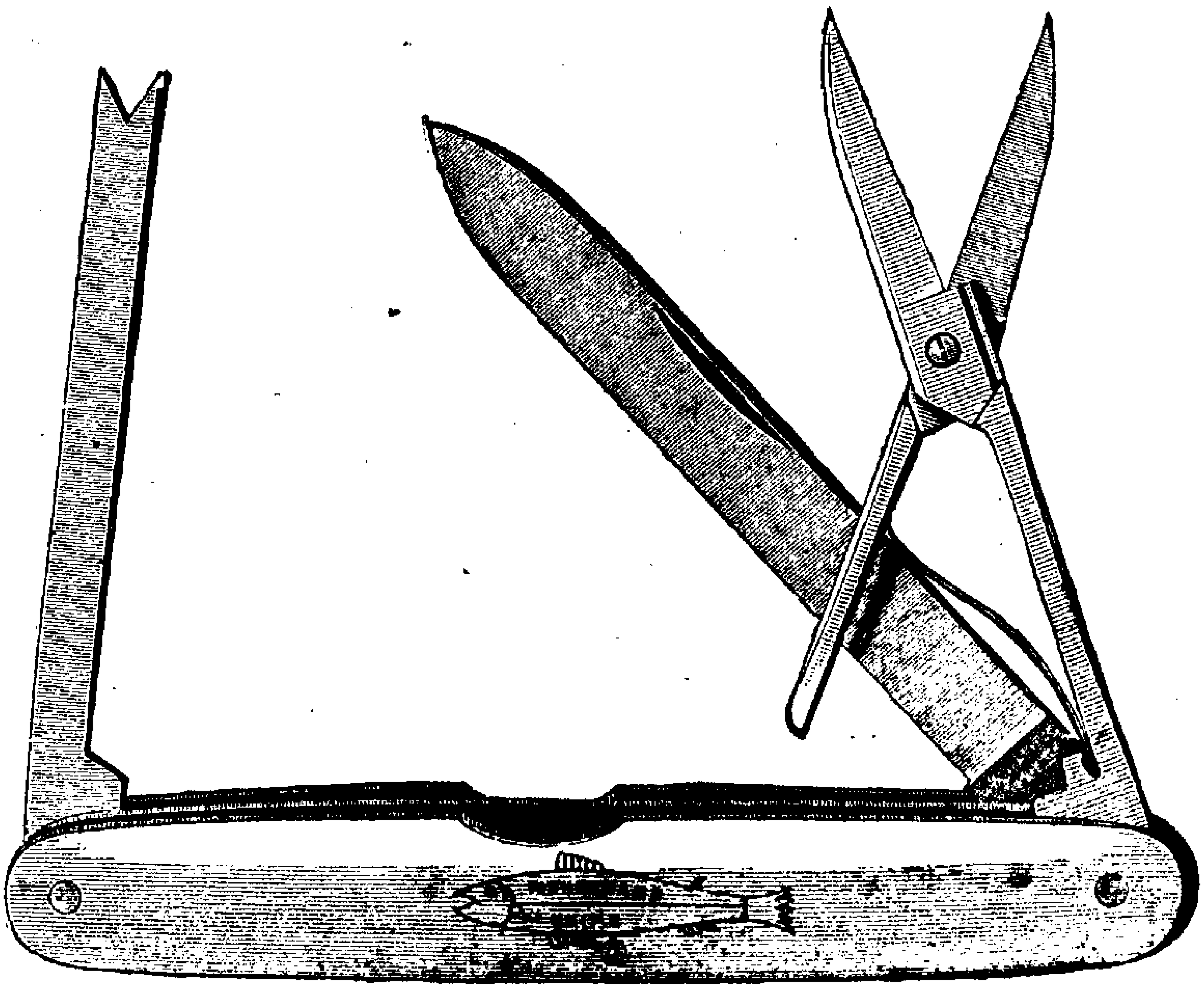
For 'waterproofing' all cloth and woollen materials—I do not say making them actually waterproof, but sufficiently so to keep the under-garments practically dry—I can recommend the following receipt, given me by R. Atkinson, Esq., of Temple Sowerby:

Dissolve sugar of lead and alum in *rain* water, one ounce of each to a quart of water. When settled down, draw off the clear (this is most easily done with a syphon), *saturate* the *woollen* article in it (I generally leave it in twenty-four hours), and dry in the open air. From my own experience I have found a coat thus treated to be quite waterproof. For a few days there is an unpleasant smell, but it soon wears off. I infinitely prefer such protection from rain to any macintosh or other india-rubber manufacture.

FISHING ETCETERAS.

I might under this heading fill a chapter, if not a volume; as taking the term in its broadest sense, fishing 'etceteras' might be made to embrace the entire contents of a tackle shop, less the half-dozen prominent items of the fisherman's equipment which I have already noticed. But I must leave these minutiæ to take care of themselves, as questions of 'space'—represented in a concrete form by Messrs. Longman—warn me to bring this chapter to a close.

In doing so, however, I would briefly refer to a few items which may be of use to the fly-fisher.



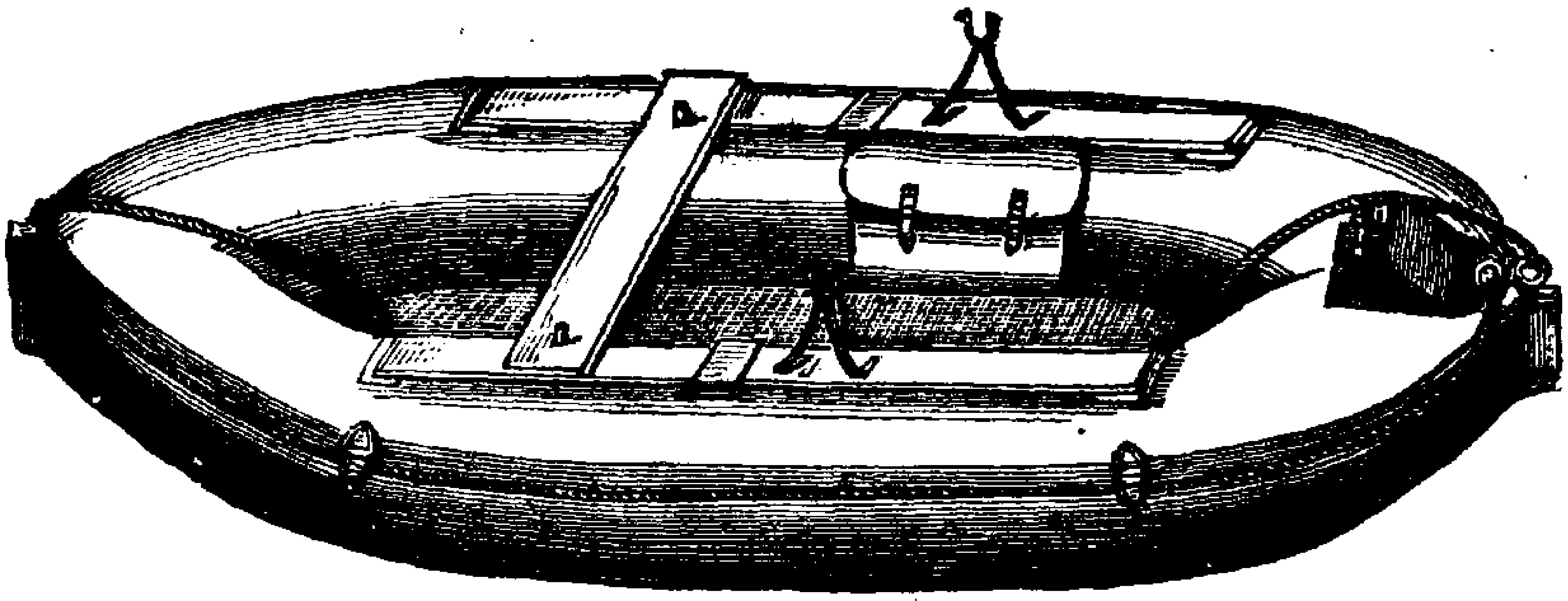
A KNIFE FOR FLY-FISHERS.

The first is a fishing knife—an almost indispensable addition to a satisfactory outfit for the river-side. The diagram above represents the most convenient form of knife that I know

of; containing in a small compass—the engraving is of the actual size—scissors, knife, and 'disgorger blade'—three implements which are liable to be called into requisition at every turn.

The second 'etcetera' is rather a bulky one, being in fact a fishing boat! As such boats made of inflatable india-rubber can now be obtained at several waterproof manufactories, and at a reasonable price, and as the comfort of one of them on many fishing expeditions, especially in lake districts, is simply not to be exaggerated, I think fishermen travelling *en luxe* will be wise to make a portable boat part of their equipment.

They are made to hold 'any number' of people, and even a boat of the smallest size is steady enough for all the purposes of the fly-fisher.



CORDING'S COLLAPSING FISHING BOAT.

The boat figured in the engraving obtained a prize at the late Fisheries Exhibition.

The Berthon folding boat is also exceedingly well adapted to fishing purposes. The Marquis of Exeter has tried several different patterns of these boats, and speaks very highly of them. I forget the exact weight; but one shown at the Fisheries Exhibition, seven feet by three feet, to carry two persons, could be easily lifted by a small boy.

CORACLE-FISHING ON THE DEE

From the 'folding-up' point of view, at any rate, the inflated rubber boat eclipses in portability its rival, the Welsh Coracle, said to be the earliest floating vehicle in the British Islands. A frame of ash-laths, bent into the shape of an elongated walnut-shell, some four feet long by three feet wide, is covered with pitched canvas—the seat, adjusted with a view to equilibrium, occupying a central position right across the middle. What the coracle is now, is probably—to judge by old records—for all intents and purposes what it was a thousand years ago (and who can say how many thousands before that?). A Welsh chronicler, Giraldus de Barri, writes that he crossed the Towey (presumably in a coracle) in 1188, whilst preaching the Crusades in Wales in company with Archbishop Baldwin, and that the boats they (the Welsh) 'employ in fishing or in getting over rivers are made of twigs, they (the boats) not oblong, ncr pointed, but almost round, or rather triangular, covered within and without with raw hides.' [Now canvass painted or pitched.] 'When a salmon, thrown into one of these boats, strikes it hard with his tail, he often oversets it, and endangers both the vessel and the man.' [1]

This beats the hitherto undefeated record of the Mullingar boats, which were described by my dear old friend Dr. Peard, in his 'Year of Liberty,' as '*perfectly* safe provided you didn't cough or sneeze'! . . . It is seldom that the *medio tutissimus ibis* maxim finds more apt illustration.

It appears, however, that they can manage, on occasion, to get two people into one of these 'tarred clothes-baskets,' as a ducked cockney once sarcastically described the nautilus of Wales. Whether either of these navigators could really wield and cast with a salmon rod [2] and a fly is a problem in hydrostatics I have never presumed personally to solve, but that

[1] *Annals and Antiquities of the Counties and County Families of Wales.* Longmans, Green, Reader, & Co., 1872.

[2] Thousands of salmon have been killed with rod and fly out of coracles—but with only one man in the coracle. It requires long practice and cleverness to do it; guiding the coracle and minding the rod at the same time is not easy.—ED.

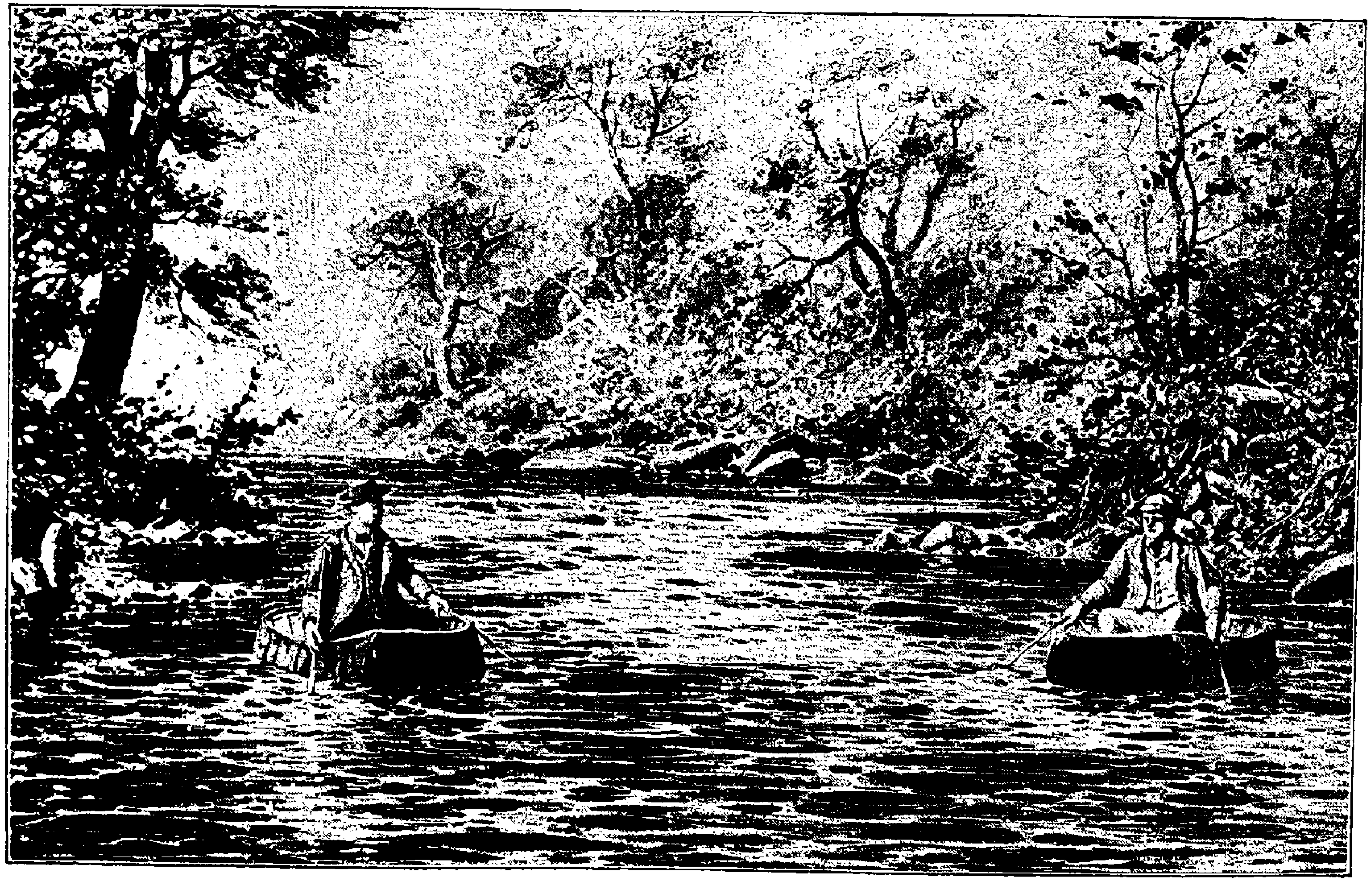
plenty of salmon are—or used to be—killed in them *without* the rod, I think I can avouch! For trout fishing they seem well suited to their *habitués*, but certainly coracle-fishing is an art which does not come by nature. The method of propulsion is by paddling, the paddle sometimes used in front[1] and pulled towards the rower, the blade being turned side- or edge-ways when recovered. This is slightly complicated in practice, and rather difficult to describe theoretically. 'If worked at the side, and the paddle used perpendicularly, the coracle only spins round without progressing' [*W. H. H.*]—a result which tends to instruction rather than edification.

The coracle is carried on the back by a band passing through the seat and over the bearer's chest, the paddle resting horizontally against his back, which prevents the bottom of the coracle incommoding the action of the legs in walking. Coracle races are an 'institution,' and afford much fun. The competitors start two or three hundred yards on land, with the coracles on their backs; launch them, get on board, and then 'go as they can.'—a 'foul' usually terminating in the capsize of one or both competitors, and no assistance is expected by a shipwrecked adversary. The length of the course is usually about a quarter of a mile.

On the Wye, Dee, Usk, and Towey the coracle is more or less generally in use both for rod and net fishing. The well-known Trammel or 'Horn-net' is often worked by this means, extended between two coracles. In rod-fishing a sort of anchor is employed to keep the boat stationary or 'slow' its course down stream—'putting on the drag,' in fact. The two appended views of coracle-fishing are taken from the picturesque scenery of the Dee. . . . But all this is rather in the way of a digression, and I apologise.

A final word on the really much more portable as well as

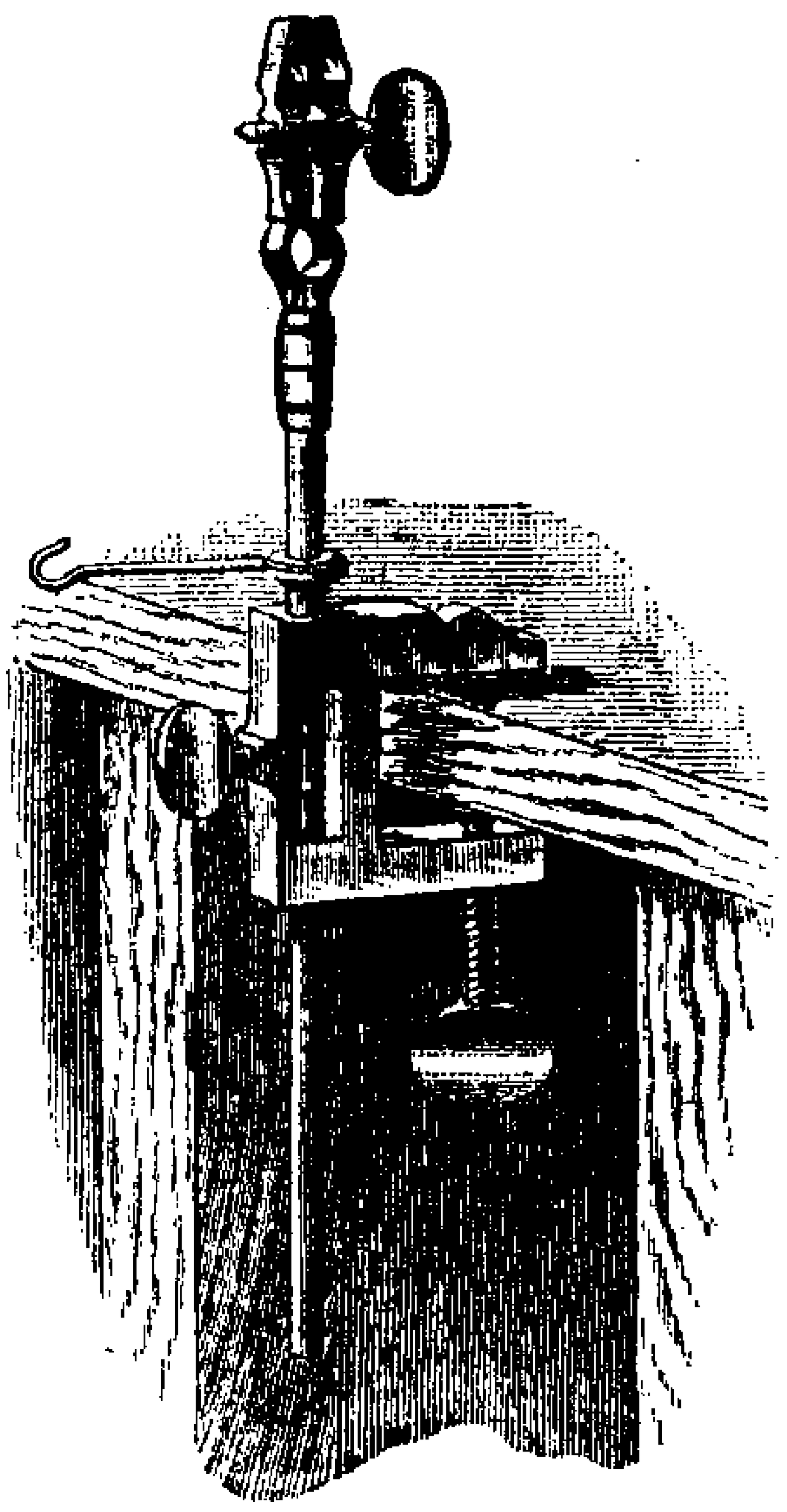
[1] The paddle is more often used at the side, being fixed between the arm and the body, and worked, like the single scull in a sea-going boat, with either hand—the paddle almost perpendicular and at the side, instead of behind like the scull in a sea boat.—ED.



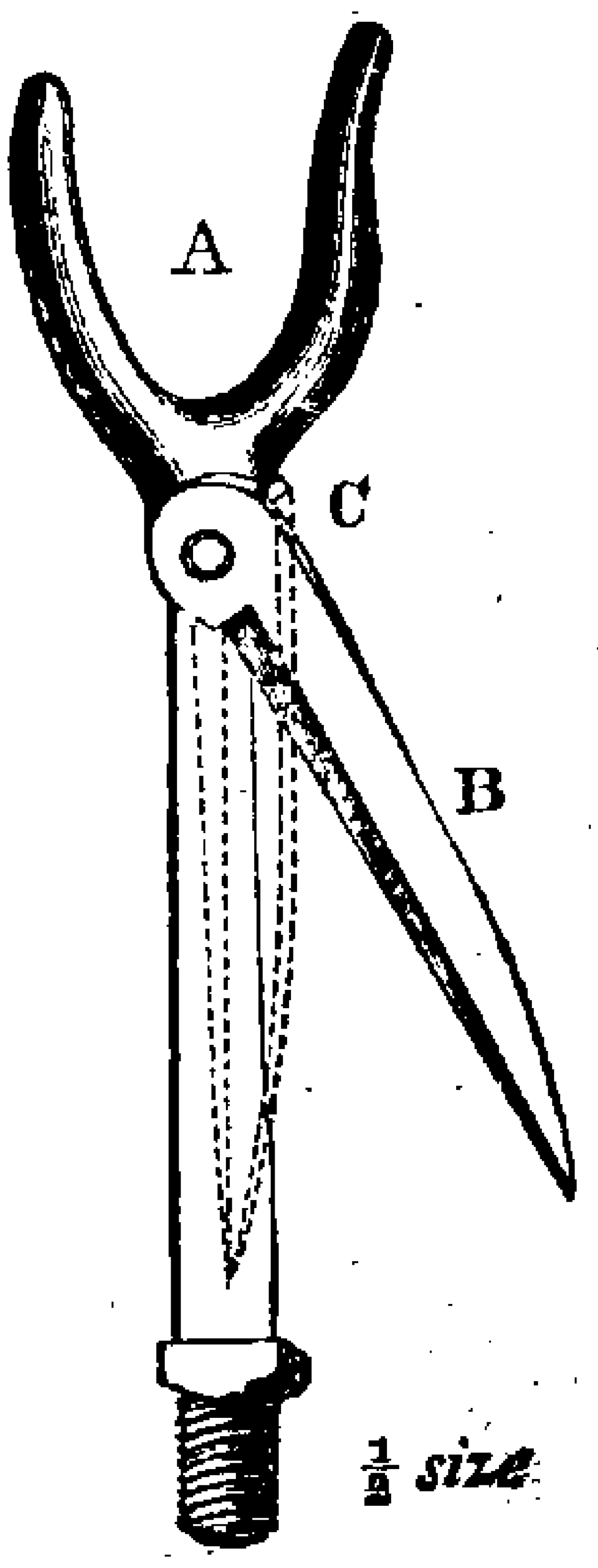
CORACLE-FISHING ON THE DEE
(*Another view*)

much more stable boats made of inflated india-rubber: I see I have omitted to mention the name of another firm, C. W. Meiter & Co., of Gracechurch Street, who also obtained at the Fisheries Exhibition a prize for their folding boats, of which the smallest size draws only two inches of water, and is claimed to be 'unsinkable.'

So now I have said my say about rods and rod woods, reels, reel lines, hooks, knots, and angling paraphernalia generally; and I repeat that I am not so sanguine as to suppose that anything



TACKLE AND FLY-TYING VICE.



MR. EARDLEY HOLT'S CLEANING KNIFE.

I have adduced will convert a single veteran to deviate a hair's breadth from his own approved patterns and theories, to add a few eyed hooks to his fly-case, or to shorten the length of salmon rod a single inch. . . . And this is just as it should be. Uniformity would be monotonous, and I am all for 'liberty

of conscience,' especially in matters piscatorial. These pages may, however, possibly meet the eye of the tyro just about to start on his first angling campaign, and if any hints I may have thrown out should help him to equip himself effectively I shall be pleased.

Let us pass on to a less technical, though I fear I must not say less intricate, subject—the history of the various Salmon and Trout species, which forms a natural, and I think to the fisherman a very useful, prelude to the more practical business of catching them.

NATURAL HISTORY OF BRITISH SALMONIDÆ.

A KNOWLEDGE—even if only a very moderate one—of the natural history and habits of fish is generally admitted to be an important element of success in angling. The history of the salmon and trout species is especially interesting, in some of its aspects even important, as bearing on the national supply of fish food, and I therefore make no apology for prefacing, by a sketch of their habits from the Angler-Naturalist's stand-point, the chapters descriptive of the practical art of catching them.

In this essay I have adopted the division or grouping of the different species of British *Salmonidæ* in two great classes: the silver, or migratory, and the yellow, or non-migratory; the first division consisting of those fish which migrate periodically to or from the sea, viz. the true salmon, the bull trout, and the sea trout; and the second division of those the habits of which usually or constantly confine them to the fresh water, whether lake or river, viz. the common, or yellow trout, the great lake trout, and the grayling.

[In this second division must of course also be included the varieties of the charr and of the coregonus, or fresh-water herring; but the habits and history of the latter are of less interest to the fisherman than to the ichthyologist, as they are confined to special localities and so far as I am aware never, or 'hardly ever,' take either bait or fly.]

This grouping commends itself not only by its simplicity and convenience of classification, but also by such broadly marked distinctions in regard to habits, localities, &c., as must override distinctions founded upon mere technical differences.

Of the silver or migratory division of *Salmonidæ*, the first in place, in virtue both of its pre-eminent qualities as a food fish and its precedence in the estimation of fishermen, is the

SALMON (*Salmo salar*).

Forty or fifty years ago comparatively little was known of the natural history of the salmon. Of theory there was a superabundance; in fact it was rare to come across a salmon fisher, to say nothing of a salmon 'legislator,' who had not some pet hobby of his own on the subject, ready to be trotted out on the parliamentary or any other plain at the smallest provocation.

Descending, however, from theory and speculation to actual knowledge, the united lore of those most interested in the salmon fisheries amounted to little beyond the bare truism that the fish ascended the rivers to spawn during the spring and summer—spawned—and descended again to the sea within the following two or three months. This, I say, was the state of our salmon knowledge some forty or fifty years ago.

The last two decades, however, witnessed a very marked and important advance.

The researches of ichthyologists and the experiments which have been conducted on a large scale by enterprising and scientific men have thrown a flood of light upon the subject, converting doubts into certainties, theories into practice, and generally advancing our knowledge to a point which has been productive of most important reforms in the management of our exhausted salmon fisheries, and in the establishment of new ones.

Amongst those to whose exertions in the practical, per-

haps, rather than in a scientific, point of view, we are indebted for much of our advancement in this field of knowledge and the attendant legislation which has effected so great an improvement in our fisheries, may be mentioned the late Mr. Ffennell, Commissioner for Irish, and afterwards Inspector of English Fisheries, and the late Mr. Frank Buckland, who for his services in the cause of salmon reform, was also appointed one of H.M.'s Fishery Inspectors. Many others worked successfully in the same direction—and deserve well of those interested in salmon and salmon fishing. Of my own share in bringing about the present improved state of affairs I need say little. My efforts, successful or otherwise, have been more than acknowledged by the press, and I may, perhaps, be pardoned if at the present time, when a great reform has been actually effected, I recall them with a certain sense of satisfaction. Not many years ago, indeed, it was remarked in an article in the 'Saturday Review' that 'Mr. Pennell, Mr. Buckland, and one or two 'others have worked hard in the cause of salmon reform in 'spite of territorial apathy, and if ever again we have this fish 'as cheap as it was in the days of the mythical "apprentices" 'it will be mainly owing to their exertions.'

It was expressly with a view of strengthening the hands of the Government in the salmon fishery reforms then pending that I projected and edited for some years the 'Fisherman's Magazine and Review,' and I believe I was the first who ever 'codified,' so to speak, the law of salmon history. To the following summary, published originally by the 'Times,' neither my own, nor, so far as I am aware, other subsequent investigations have indicated any material additions.

PROVED FACTS IN THE HISTORY OF SALMON.

1. Salmon and grilse invariably spawn in fresh water if possible—both the eggs and the young fry whilst in the parr state being destroyed by contact with salt water.

2. The eggs are usually deposited on gravelly shallows

where they hatch in from eighty to one hundred and forty days, according to the temperature of the water. Eggs remaining unhatched beyond the latter period will seldom hatch at all.

3. The eggs deposited by the female will not hatch under any circumstances unless vivified, after exclusion, by the milt of the male; and—at least up to the period of migration—there is no difference whatever in fry bred between salmon only, between grilse only, between salmon and grilse—between salmon and parr, or between grilse and parr.

[*Note.*—The female parr cannot spawn; but the male parr possesses, and constantly exercises, the power of vivifying salmon and grilse eggs.]

4. The fry remain one, two, and, in some cases, three years in the rivers as parr before going down to the sea—about half taking their departure at one year, nearly all the others at two years, and the remainder (which are exceptional) at three years old.

5. All young salmon fry are marked with bluish bars on their sides until shortly before their migration, up to which period they are parrs; they then invariably assume a more or less complete coating of silvery scales and become smolts—the bars, or parr marks, however, being still clearly discernible on rubbing off the new scales.

6. The young of all the species of our salmon and trout, migratory and non-migratory, have at some period of their existence these bluish bars; and consequently such marks are not by themselves proofs that fry bearing them are the young of the true salmon (*Salmo salar*).

7. Unless the young fish put on their smolt dress in May or early in June and thereupon go down to the sea, they remain as parrs another year; and without smolt scales they will not migrate, and cannot exist in salt water.

8. The length of the parr at six weeks old, is about an inch and a half or two inches; and the usual weight of the smolt before reaching the tidal wave from one to two ounces.

9. In at least many cases, smolts thus migrating to the sea in May and June return as grilse, sometimes within five, generally within ten weeks, the increase in weight during that period varying from two to ten pounds, the average being from four to six pounds; and these grilse spawn about November or December—go back to the sea—and (in many cases) reascend the rivers the next spring as salmon, with a further increase of from four to twelve pounds. Thus, a fish hatched in April 1854, and marked when migrating in May 1855, was caught as a salmon of twenty-two pounds weight in March 1856.

10. It appears certain, however, that smolts do not always return during the same year as grilse, but frequently remain nine or ten months in the sea, returning in the following spring as small-sized salmon.

[*Note.*—It will thus be seen that the fry of salmon are called *parrs* until they put on their migratory dress, when they become *smolts* and go down to the salt water; *grilse* if they return from the sea during the first year of their migration; and at all other periods *salmon.*]

11. It has also been clearly proved that, in general, salmon and grilse find their way back to spawn to the rivers in which they were bred—sometimes to the identical spots—spawn about November or December—and go down again to the sea as 'spent fish,' or 'kelts,' in February or March—returning, in at least many cases, during the following four or five months as 'clean fish,' and with an increase in weight of from seven to ten pounds.

[*Note.*—Shortly before spawning, and whilst returning to the sea as kelts, or spent fish, salmon are unfit for food, and their capture is then illegal. 'Foul fish' before spawning are, if males, termed red fish, from the orange-coloured stripes with which their cheeks are marked and the golden orange tint of the body; the females are darker in colour, and are called black fish.]

The foregoing still represents, in a condensed form, our positive knowledge as regards the leading facts of salmon history.

The irregular return of salmon from the sea, referred to in

paragraph 10, which, I believe, I was the first to call attention to, will be found to explain many apparent anomalies and irregularities in the habits of salmon in different rivers as observed and chronicled by local fishermen and others; and the time may come when under a more minute and complex system of salmon legislation it will be found to have an important bearing upon the regulation of our fisheries.

In tracing the history of the salmon we will begin with the adult fish on their ascent from the sea, whether as salmon or grilse. At varying periods during spring and summer months *a proportion at least* of salmon in the bays and estuaries of the coast make their way up the rivers for the purpose of spawning—their general colouring at this period being a brilliant silvery white, merging into a bluish black with a few dark spots on the upper part of the body and head.

When first ascending from the sea, salmon are termed 'fresh-run' fish, and are then in the most perfect condition both for the rod and the table.

A fresh-run salmon may not only be generally known by the bright silvery hue on the belly and sides, but also, when just up from the sea, by a species of parasite, or sea louse, which may be frequently found attached to the fish. These, however, are killed by a few hours' contact with fresh water, but the salmon exhibit for some time after the marks or scars left by the parasite.

The periods of ascent and spawning of salmon differ in different rivers—are earlier or later, that is, in point of time. Streams issuing from large lakes, in which the water has previously undergone a sort of filtering process, and has become warmer, owing to the greater mass and higher temperature of its source, are often what would be described in angling parlance as 'early rivers;' whilst, on the contrary, streams which are liable to be swollen by the melting of snows, or cold rains, or which are otherwise bleak and exposed, are frequently later in season, and yield their principal supply when the great

lake rivers are beginning to fail. Of these operating causes two of the Sutherland streams afford good examples. One, the Oikel, springs from a small exposed alpine pool some half mile in breadth; the other, the Shin (a branch of the Oikel), takes its rise in the deep sweeping waters of Loch Shin and its tributary lakes. The Shin joins the Oikel about five miles from the sea. Early in the spring, all the salmon entering this common mouth diverge at the junction, pass up the Shin, and thus return, it would appear, to their own warmer stream; whilst very few keep the main course of the Oikel until a much later period.

Nor does it appear that these operative causes and their resultant effects are confined to Scotland. An analogous instance, indirectly traceable to the same cause, has been pointed out by Dr. Heysham, in his 'Catalogue of Cumberland Animals,' as observable in several of the rivers of that county: The salmon, during winter and spring, evidently prefer the Eden to either the Esk, Caldew, or Peteril, although the Eden and the Esk pour their waters into the same estuary, and, in fact, are only separated at their mouths by a small promontory. There is hardly an instance, Dr. Heysham asserts, of a salmon entering the Esk until the middle of April or beginning of May—a circumstance always referred by local fishermen to the difference in temperature between the two streams. The waters of the Eden, they allege, are considerably warmer than those of the Esk, which, from the shallow and rocky character of the bed of the Esk, appears not improbable.

Be this as it may, it is an indubitable fact that snow water prevents salmon from running up even the milder stream of the Eden.

The Caldew and the Peteril, again, pour their waters into the Eden, the one at, and the other a little above Carlisle; yet up neither of these rivers do salmon ever run, unless at the spawning season, and then but in small numbers.

The rule, however, which would appear to be inferred from

the instances quoted is far from being invariable; and as it has been found that the time of salmon ascending and spawning frequently differs in neighbouring rivers of the same district —in some cases even where their sources and channels are apparently of a similar nature—it is very possible that we have yet to arrive at the whole truth respecting the causes of these variations.

With regard to the sort of resting places or holding grounds which salmon most frequent, they appear, as often as not, to be guided by sheer caprice. There are some pools which, to the angling eye, or, at any rate, the uneducated angling eye, are apparently perfection, and which yet seem never to hold a fish from year's end to year's end, or if they do hold a fish they are fish which cannot be induced to take the fly or bait. Indeed, there are particular stones in particular rivers behind which for some inscrutable reason, salmon will almost invariably be found. I know just such an one in the Conway, and there is another, if I recollect rightly, in the Tweed. It does not signify how often the salmon sheltering behind these stones is caught—I have known three thus taken in one day—his place appears to be filled again almost immediately.

Still, notwithstanding this capriciousness of salmon in the choice of water, there are some general rules which may serve as approximate guides to the salmon fly-fisher when unassisted by local knowledge. Where the bed of the river is of bare or naked rock, unbroken by ledges or 'shelters' of any sort, salmon—or, at any rate, rising salmon—will rarely be found. All sorts of shelters and rocky excrescences are, no doubt, in themselves favourable for salmon, both as affording shelter from the stream and a point of outlook from which fly and other bait may be advantageously perceived; but, as Mr. Stoddart also points out in his 'Angler's Rambles,' the ledges of rock and large stones to which salmon instinct inclines 'will invariably be found, when the salmon are settled down, to lie in conjunction with or in the vicinity of a firm gravelly "*alveus*."' Elsewhere, Mr. Stoddart illustrates this fact by the

Garry, the course of which from Faskally upwards through the pass of Killicrankie is 'mildly rapid and its bed strewn over with rocks and boulders of every dimension. . . . One not fully versed in all the outs and ins of salmon fishing, proficient as he might be in the use of the rod, becomes so deceived as to construe the interspersed breaks and shallows, the flush of water passing through the tired eddies, the jutting shelves which gleam underneath—the whole build, in fact, of the channel—into a series of admirable resting places for the fish. . . . But the truth simply is that in resting humour no fish are ever there. Such are not the spots where the instinct of salmon induces them to halt at and show appetite. Proceed farther up. Climb from its torrent termination to the head of the pass, to the point in the course of the Garry where the distribution of the rock becomes alternated also with stretches of alluvial deposit—in fact, with spawning ground—and in the pools favoured by such a combination you will find that not only are salmon to be met with, but that they are to be met with in a position which prompts and enables them to come readily towards the offered lure of the angler.'

As observed, however, the caprices of salmon with regard to the particular parts they favour or reject, and even as to the position occupied by each individual fish, where there are several in the same pool, are most curious. Possibly the latter arrangement may be dependent upon some 'first come, first served' principle—a sort of piscine recognition of the rule of *beati possessores*. Where salmon are very numerous indeed, as for example in the Galway River, I have seen whole shoals which for some reason appear intent on 'keeping themselves to themselves,' and from whose ranks straggling was evidently interdicted. These different shoals were almost always of different sizes. An interesting example of this was noticed by my friend, Sir Charles Mordaunt, in the case of a pool in a well-known Scotch river. In a letter to me he says: 'Once, when the water was too low for fishing, a friend and I had the opportunity of very closely observing the salmon as they lay in "ranks"

near the tail of the pool. Crawling to the bank's edge, and cautiously putting our heads over, we could see everything that went on below. In the front rank there were five large fish only, one apparently of about 30 lbs., the others running perhaps from 20 lbs. to 25 lbs. In the second rank were fifteen ranging from 15 lbs. to 20 lbs.; in the third twenty-three from 10 lbs. to 15 lbs., and in the rear rank the Grilse, some thirty-two in number. All the fish were motionless except for the slight action of the tail fin necessary to keep them up to the stream. We then sent the keeper round to stir them gently by throwing a stone in behind the Grilse, which caused the whole body to move up into deep water; but after waiting about an hour we saw them begin to return to their former quarters, where by degrees they took up their original formation in perfectly "dressed" ranks, and without a fish missing.

'When the water was barely high enough for fishing, I could still command a sight of the bottom of the pool, although not a perfectly clear one. As the fly passed over him, a salmon before rising invariably turned on his side. . . .'

To return to the subject of salmon migration. Allowing for the exceptions previously pointed out, the order in which fish ascend rivers is generally somewhat as follows: The strong, early runners come first. These are succeeded by the grilse, and by the small 'spring salmon' which have probably never ascended at all as grilse, but have remained in the sea since the smolt state—a period of from eight to ten months, as noticed in 'Proved Facts,' No. 10. The tails of these spring salmon are not so forked as those of grilse. A few of them generally appear with the early-running fish.

As the season advances, the larger fish and those heavy with spawn begin to work their way upwards from the mouths of the rivers and estuaries towards the higher reaches; and such fish continue ascending from the sea until the close of the autumn, or, if the river be an 'early' one, of the summer. Even as late as November and December, and the January

and February following, a few fish continue to run which have been usually considered as 'barren'—without capability of spawning; but this notion was proved by the late Mr. W. F. Ffennell to be erroneous. Upon dissection he found that the females had ova in them perfectly developed, although not larger than mustard seed, whilst in the males a thin thread of milt was always discernible.

These fish, of which many ascend the Tay in November and the three following months, remain nearly a year in the fresh waters before spawning, and although their colours gradually become darker in consequence, they are to all intents and purposes 'clean fish,' and are exceedingly good eating.

The term 'clean fish' is used as the antithesis of 'foul fish' —a term applied to all salmon which have either not recovered from the effects of spawning, or in which the roe or milt has arrived at a great degree of maturity.

The so-called barren salmon appearing at a time when most fish are spawning, or are just recovering from the process, illustrates what I believe to be the most important fact connected with the history of salmon, viz. that the principle of a *divided migration*, already referred to, is not confined to the parr on going to the sea, or to the smolts on their return from it, some as grilse, and some as spring salmon, *but that it also extends to the old and adult fish after spawning*—one portion of these latter coming back into the rivers during the following summer, and the rest not until the spring succeeding it; in other words (and this is the gist of the whole), that at least a proportion of salmon *spawn only every alternate year.* The design of this law or instinct—which, when once apprehended, will be found to explain many of the perplexities in the history of the salmon—is intelligible enough. It is evidently to insure a supply of clean fish throughout as large a portion of the year as possible, and to enable each river to support the greatest stock—a result which could only be obtained by such a provision as the above. It is also doubtless intended to insure an equal distribution of fish throughout the whole length of the river. These salmon,

by ascending thus early, before their spawn is at all matured, are vigorous, and able to overcome the obstacles in their upward course to the extreme sources of the river—to which those fish remaining in the sea until heavy with spawn could never penetrate.

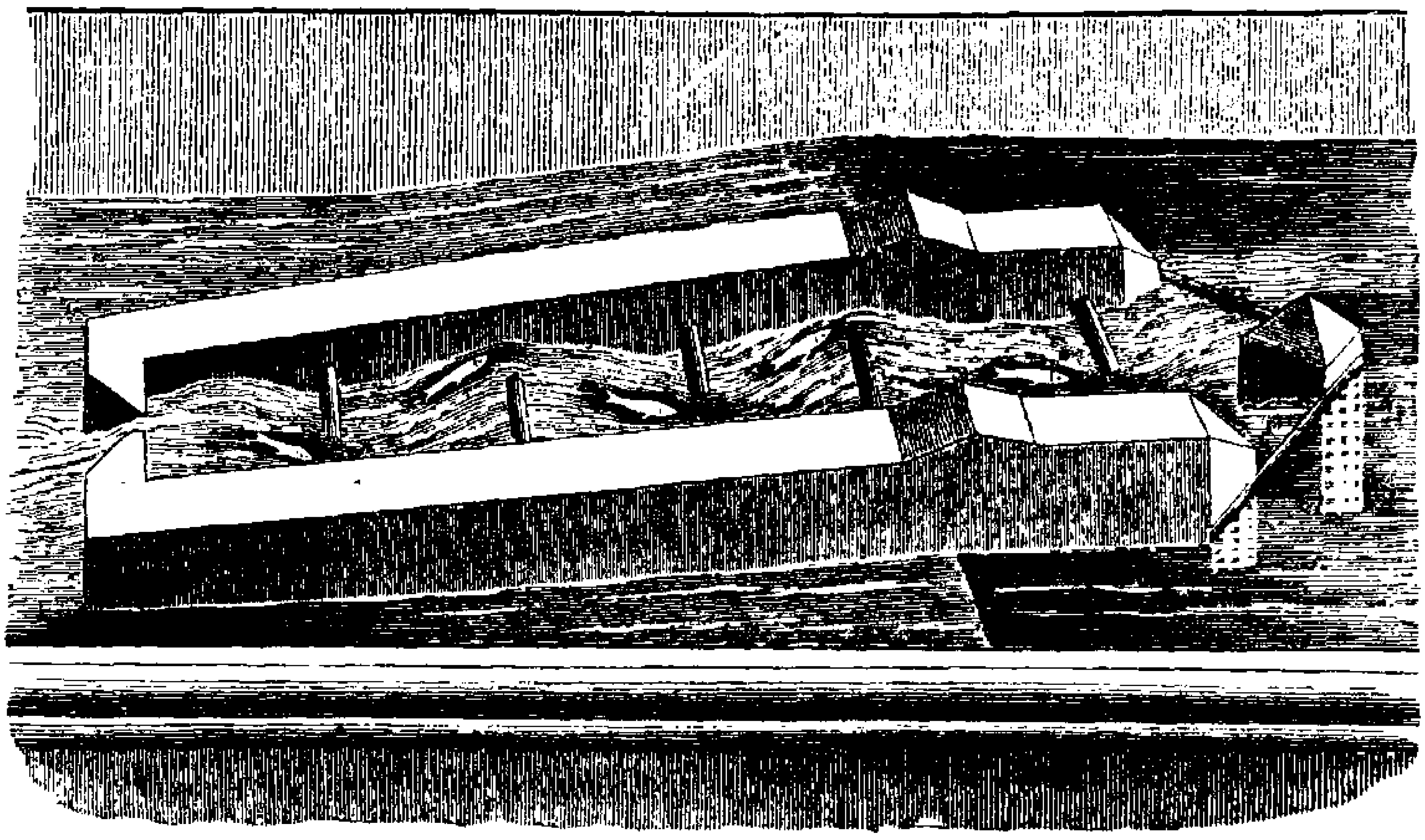
Curiously enough, an analogous fact has been noticed with regard to the spawning of the common trout. Dr. Davy, who was in the habit of opening the fish he caught, records that by this means he discovered that, as the spawning season approached, only about one-half of the females had visible eggs, whilst in the other half there were *no signs of the development of the ova.* Charr, also, are frequently taken in Windermere in high condition in October and November, which is their regular spawning season—a fact which would seem to point to the possibility of the rule of alternate spawning years holding good in the case of all the fish of the salmon and trout species.

But to return. The ascent of salmon to the spawning grounds is usually somewhat in this wise. During the early part of the season, the fish in the rivers, which do not at once ascend, remain in or near the mouths. But with the advance of the season they get gradually farther into the fresh water beyond the influence of the sea. The edible quality of the salmon when thus ascending rivers depends entirely upon the state of development of the milt or roe—a loss of condition, accompanied by the usual change of colour, following, even in the salt water, upon the maturing of the spawn. The efforts of the salmon to surmount all obstacles to their ascent of the rivers increase with the approach of the spawning time, and they shoot up rapids, and make wonderful exertions to surmount cascades and other impediments, frequently clearing a height of two or three yards at a bound. It has been calculated that, when swimming, or rather darting at full speed, the salmon will glide through the water at the rate of about 1,500 ft. per minute, or upwards of 400 miles per day—a pace which, if it could be maintained, would speedily carry the fish round the world.

Although the height to which a salmon will leap seems

wonderful to those who have watched the process, we may well hesitate to accept all the 'tall stories' on the subject which have been put on record, with more or less show of authority. No doubt the depth of water from which the spring is taken materially influences its height; but I should hesitate to assert that I had myself seen a perpendicular leap exceeding ten or twelve feet—and I have seen some thousands. Frequently the fish are actually killed by the exhaustive violence of their exertions or injuries caused by falling back on the rock.

Salmon ladders or stairs by which the fish are enabled to



MODEL OF FIRST SALMON LADDER APPROVED BY THE HOME OFFICE.

surmount high weirs and other obstructions have proved of infinite value to the fisheries, and will, it is to be hoped, come into yet more general and extensive use. This subject, for reasons of space omitted here, is referred to in the earlier editions.

Many rivers are still absolutely blocked to the ascent of salmon by impossible obstacles; but where no such impediment exists the instinct of the fish is to go on ascending by degrees

until they gain the upper and shallower reaches, or spawning grounds. At this time all the salmon and trout species resident in fresh water, both migratory and non-migratory, acquire, in lieu of their brilliant spring tints, a dusky yellowish exterior, accompanied by a considerable increase of mucus or slime—the fins also becoming more muscular.

The usual time of salmon spawning is from November until the latter end of January or the beginning of February.[1] As the all-important operation approaches their colours undergo a still further deterioration, the general hue of the body in the males assuming a browner or more golden tinge, and the cheeks being marked with orange-coloured stripes; the lower jaw elongates, and a gristly projection or horn turns upwards from the point, which is used by the salmon as an organ of offence in its contests with other fish. In this state the males are called 'Red fish,' or are said to be 'on the reds.' The females are somewhat darker in colour, and are known by the name of 'Black fish.' The process of spawning is as follows: A pair of fish, male and female, select a gravelly shallow suitable for the purpose, which is generally occupied also by other spawners, both salmon and trout, as well as by a considerable number of male parrs.[2] The female deposits her eggs in shallow furrows in the gravel, to which they adhere by a thin coating of glutinous matter, the male at the same time shedding his

[1] There are, however, exceptional rivers, both earlier and later, as already pointed out; and it is probable that many of the so-called 'barren fish,' entering the fresh water in November and December, spawn in the succeeding October.

[2] Parr, as stated in *Proved Facts*, No. 3, are perfectly qualified to continue their species, and they perform a most important part in the reproductive process; for the attentions of the male salmon being constantly distracted by the necessity of protecting the spawning bed from the intrusion of the other fish, the ova of the female are during these absences vivified by the milt of the parrs. According to experiments by Mr. John Shaw (subsequently confirmed by those of Stormontfield), male parrs attain to the breeding state in about eighteen months, from the time of hatching. The females, it would appear, never become prolific whilst in the parr state unless they are amongst the exceptional fish alluded to in *Proved Facts*, No. 4, which remain over the third year in the rivers before migrating.

milt over them. Whether these furrows are made conjointly by both spawners, or by the female fish only, and whether the snout or the tail is the organ used in the delving process, have been disputed points amongst naturalists. From the concurrent testimony, however, of those who have had the best opportunities of observation, it now appears certain that the trenches are made by the tail of the female fish only, and that the male takes no share whatever in the more laborious parts of the domestic arrangements. The only extra-matrimonial function that he performs consists in exerting an unwearied vigilance to protect his seraglio from the invasion of rival males, all of whom he assiduously endeavours to expel—living, in fact, in a perpetual state of active hostilities.

These conflicts are incessant; and it sometimes happens, when a rival is either very fond or very fierce, that the domestic supremacy is only to be maintained at the cost of a prolonged and desperate fight.

The weapon of attack in all these battles appears to be the cartilaginous bone or excrescence on the point of the lower jaw, which is used as a sort of battering ram, the fish, as described by Mr. Walsh, rushing on open-mouthed, and turning on his side in striking. In the case of the male fish being captured or killed, the female retires to the nearest large pool in search of a fresh mate, with whom she returns and completes the process of depositing her eggs. This she will repeat several times if her partner be removed; and it is mentioned as a fact by Mr. Young, in his evidence before a Committee of the House of Commons, that nine male salmon in succession have thus been killed from the side of a single female, who then brought back with her, as companion, a large yellow *trout*.

In consequence, we may suppose, of the arduous nature of his military duties and reddish colour at this period, the term 'old soldier' is frequently used to designate the male salmon after spawning; and I recently examined an old soldier in which the whole of the back and head was one mass of scars and wounds.

The female, regardless of the frequent absences of her lord during his internecine contests, and probably satisfied with the presence of the male parr, proceeds quietly with her operations by throwing herself at intervals of a few minutes, upon her side, and whilst in this position, by a rapid action of the tail, she digs a receptacle for her eggs, a portion of which she on each occasion deposits, and, again turning on her side, covers it up by a renewed action of the tail—thus alternately digging, depositing, and covering over until the whole are laid.

The adult fish after spawning are called 'spent' or unclean fish, or 'kelts;' and at this time they are quite unfit for food —indeed almost poisonous—and their capture is prohibited by law. Lately spawned kelts may be recognised by their dark unhealthy colour, lanky flaccid appearance, and by the enlargement of the vent. Their gills also are almost invariably found to be infested by a species of white worm, the *Lernæa salmonis* of Linnæus, often improperly called a maggot, from which they are released by contact with the salt water—a similar release from other parasites being obtained on passing to the fresh water from the sea.

For some time after spawning, however, they are in a very weak and exhausted state, and have not energy for immediately descending the river. Accordingly they usually drop down from the spawning grounds, or 'redds,' to the first quiet deep, there remaining until their strength is recruited. They then continue falling back with the winter and spring floods, descending from pool to pool, and avoiding as much as possible weirs and rapid currents, until they reach the sea. Here they quickly recover their condition, to ascend the rivers again (in at least many cases) in the autumn or succeeding spring for the same purpose as before, but almost always remaining some time in the brackish water or tideway before making either decided change.

Within a period of five or six months after their return from the salt water, it has been proved that at least a proportion of

kelts find their way back to the upper reaches of the river as clean fish, having gained in weight during the time from seven to ten pounds.

The annexed table shows the actual increase of weight in three fish marked by the Duke of Athol when returning to the sea as kelts :

Caught as kelts or spawned fish returning to the sea.	Weight	*Retaken ascending the river as clean fish.*	Weight
No. 21—Feb. 14 . .	10 lbs.	No. 21—Aug. 18 . .	17 lbs.
No. 76—Mar. 2 . .	11½ lbs.	No. 76—Aug. 18 . .	17 lbs.
No. 95—Mar. 29 . .	12½ lbs.	No. 95—Aug. 12 . .	19 lbs.

Whilst descending to the sea in the spring months kelts are a great annoyance to anglers, as at this time they are ravenous for food, rising greedily at any sort of fly, and though not so strong and obstinate as clean fish, often taking up more time in landing than can conveniently be spared.

That spawned fish improve greatly before they leave the fresh water there is no room to doubt (although they are never really in prime condition for the table until their return from their sea trip), and hence the expression, 'A well-mended kelt;' which is common amongst fishermen. These kelts are often almost as bright and silvery looking as the really clean fish, and are not unfrequently sold as such in the towns ; but the head is disproportionately large, owing to the body not being filled up, and upon opening the gill covers, the white worm, before mentioned, will almost invariably be found adhering.

The hatching of the eggs and the growth of the young fry is the next great event in salmon life, and leaving, therefore, the exhausted and more or less ill-conditioned kelts to recruit themselves in their salt-water bath, we return to the spawning bed where the eggs are approaching the time of hatching. Into this bed, during the preceding three months, a dozen females have each poured the germs of, say, from seventeen to twenty thousand salmon, which, if they all arrived at maturity, would represent in approximate figures some three million five hundred thousand pounds weight of wholesome food, or a

money value of about 160,000*l.* Unfortunately, however, the fry actually added to the stock of the river are a mere fraction, and those that survive to return as grilse a very trifling fraction of these numbers. The calculations that have been made vary from about one in every thousand, to one in every *six thousand*, out of the original deposit of ova,—a wholesale slaughter which might appear incredible if we did not realise how numerous are the causes of destruction. From the laying of the egg until the plunge of the young smolt into the tidal wave, and even afterwards in the broader waters of the estuary or open sea, a hundred wholesale depredators lie in wait for it.

First there are the shoals of hungry fish of all kinds which prowl about the fords, pressing close behind the spawner, and ready to fight for her eggs almost before they are laid; then come the voracious larvæ of the may-fly and stone-fly, the water shrimps, and a host of kindred insects, which work their way in amongst the gravel and destroy, perhaps less ostentatiously, but not less certainly; or a winter flood will sweep down the river, and bury a whole brood under a foot of sand drift. If the egg escapes these perils, and, in due course, releases its charge, fresh dangers await the delicate and immature fry. The trout, the heron, the wild duck—nay, even the parent salmon themselves—hunt it out in its sheltering creeks and crevices; and hundreds of fry are daily sacrificed on a single spawning bed by this means. Lastly, as if these 'natural enemies' were insufficient, comes the human parr-poacher, man and boy,—and the wonder is really not at the high rate of infant mortality amongst the *Salmonidæ*, but rather at there being any survivors. The first sign of animation in the ova, which have now been deposited and covered carefully up under little mounds of fine gravel, is the appearance of the eye, which may be noticed, a scarcely perceptible black speck, in from forty to sixty days after deposition. The eye gradually increases in size until the time of hatching—an event which usually occurs in from 90 to 140 days, according

to the temperature of the water and forwardness of the spring.

The actual bursting of the young salmon from the egg, which I have often watched, takes place thus: The fish lies in the shell coiled round in the form of a hoop; and the greatest strain being at the back, it is at this point that the shell splits across. After a few struggles, it is completely thrown off with a jerk—leaving the red yolk of the egg, by which the fish is nourished during the first five or six weeks of its existence, suspended in a conical bag under the stomach. At this 'bag stage' of its development the future monarch of the stream is represented by a mere ragged line, fringed at the edges and almost transparent, the head and eyes being prominent and altogether out of proportion to the body, which measures only about five-eighths of an inch in length, and is of a pale peach-blossom or azure tint. In thirty-five or forty days after hatching the yolk bag disappears, and the fry becomes a perfect little fish of about an inch long with the fins separated and properly developed, and the tail deeply forked at the end. The general colour now also changes to a light brown; and the sides are indistinctly crossed by nine or ten transverse dusky bars, or parr marks, characteristic of all the species of salmon and trout when in an immature state, and which in the true salmon remain more or less visible even in a smolt or parr six inches long.

The differences in appearance between the fry of the salmon, bull trout and sea trout, and probably also between the fry of the other allied species of the genus, are so trifling as to be scarcely perceptible, and are, moreover, liable to variations with local circumstances.

The young salmon fry are unable to move about very freely, owing to the presence of the vitelline, or yolk bag, which impedes their motions in swimming, and obliges them when at rest to lie perpetually on their backs, unless artificially supported. This support they seek to obtain by placing themselves amongst gravel or in crevices between stones, exhibiting generally

a great desire to escape observation—an instinct given to them, no doubt, for their preservation during so feeble and helpless a condition. On the disappearance, however, of the yolk bag and assumption of the parr marks, they come from their hiding places, and are to be found, on careful search, in the streams in or near which the parent salmon deposited their spawn during the preceding winter.

At two months old the parr begins to acquire a more symmetrical form, and the disproportion in the size of the head ceases to be observable; at four months the characteristic parr marks are clearly defined; and at six months the fry has reached the length of three or four inches, and is the small-sized parr so constantly found in salmon rivers.

The next change is that of the parr into the smolt, preparatory to the first migration to the sea.

In somewhat more than twelve months from the time of hatching, that is, between the middle of April and the early part of June—about half of the last year's parr begin to assume their 'bathing dress' or coating of silver scales as contrasted with the yellower scales worn up to this period. These silvery scales, which form the distinctive mark of the smolt, as distinguished from the parr, are never put on except when the fish is about to migrate; and without them it will not migrate at all, and cannot exist in salt water, as has been proved by experiment. These scales come off upon slight pressure and the parr marks are visible below.

At this time the habits of the transforming fish undergo a marked alteration. As parr they show no disposition to congregate, each occupying its own place in the pond, and any intruder upon a post already tenanted being instantly and forcibly expelled; but as soon as the whole brood have donned their travelling costume—an operation usually lasting two or three weeks—they collect in a shoal, and show their desire to escape by scouring about hither and thither, leaping and sporting, and generally displaying a greatly increased amount of energy and activity.

One half of the young fry migrate when about a year old—almost all the other half at their second year—and the few remaining at their third year—but the period of the descent is very generally the same in either case—and in all rivers, whether early or late—beginning in March and continuing through April, May, and the early part of June—only a few fish continuing to migrate during the subsequent months.

The length of the smolt when migrating varies from three and a half to seven or eight inches, according to age and other circumstances.

Its full colours are, dark blue or bluish green on the upper half of the body and head, with black or carmine coloured spots ; gill covers and lower half of the body silvery, and all the fins much darker than those of the parr. The silver scales come off on slight pressure and the parr marks are visible below. What becomes of the young fish after reaching the sea is still, more or less, a matter of conjecture. What we do know positively is, that in from six to eight weeks a number return to the same river with an increase in weight of from two to five pounds, and that many of the fry marked when migrating as smolts in May and June, are sold in the London markets as grilse in July, August, and September. It is a fair point for conjecture, and would be an interesting subject for future experiment, whether the grilse returning the same season may not consist principally of the *two-year-old* smolts, and so on ; or whether, should this prove not to be the case, these older smolts may not represent the larger-sized grilse, and the younger fish the smaller ones.

The following is the actual growth of some smolts marked at Stormontfield, when on their way to the sea, and captured on their return as grilse during the same year :

	Weight		Weight
July 1	3 lbs.	July 31	9½ lbs.
July 20	5½ lbs.	Aug. 4	7½ lbs.
July 21	5 lbs.	Aug. 4	8 lbs.
July 30	7½ lbs.		

Of the habits and food of the salmon in its various stages

whilst in the sea we know little. In his evidence before the Select Committee of the House of Lords in 1860, Professor Quekett stated it as his opinion that salmon travel some distance along the coasts, and probably into deep water, in search of the ova of the echinus or sea urchin—a species commonly inhabiting a depth of not less than from six to twenty fathoms. Professor Huxley disagreed with this view as regards the nature of the food, and believed that it consisted chiefly of a numerous class of small creatures—entomostracous crustacea—found in semi-solid masses upon the surface frequently of deep water—in fact, that the salmon swims in a species of animal soup, in which it has merely to open its mouth and swallow what enters it. Dr. Knox was of opinion that the food consisted of the ova of various kinds of star fish, sea urchins, encrinites, &c., and some of the crab and lobster family, whilst Dr. Fleming and several other naturalists have observed upon the partiality of salmon for the sand eel or sand launce—a fact which is confirmed by Sir John Richardson, who states that he has himself taken this fish from their stomach. Herrings and many other kinds of fish are also probably laid under contribution.

But whatever be its food, judging from the perfect arrangement of the teeth and the tremendous rate at which it increases in bulk, there can be no doubt that the salmon is a most voracious feeder—although the very small amount of food usually found in the stomach has hitherto been a source of difficulty in ascertaining its exact nature. The singularity of this latter circumstance has often been discussed by writers on ichthyology, and it has been suggested, amongst other less probable explanations, that the gastric juice of the fish was so powerful as to dissolve almost instantaneously whatever was subjected to its action—another, and I am inclined to think, more correct hypothesis being that the fish ejects its food on finding itself hooked or netted.

On this subject a writer in 'Once a Week' furnishes evidence which seems to be practically conclusive: 'My friend, Mr. Walter Campbell,' he says, 'informed me that he once had

a wonderful haul of salmon at Islay. . . . He landed 716, and many of them escaped. As the net approached the shore *he saw the fish discharging the contents of their stomachs*, which consisted of small eels.'

As regards the travelling or otherwise of the salmon in the sea, the thousands of salmon constantly taken in nets along all parts of our coasts are a clear proof that they do travel, at least to considerable distances, from their native rivers and estuaries; and from the observations of Sir William Jardine and Dr. Heysham it would appear probable that, when the fish happen to have thus wandered beyond their usual limits, they will at the proper season run up the first stream they meet with, the temperature and condition of which are congenial.

The more usual course of events, however, is for the salmon to return to their own rivers or localities, most remarkable and well-authenticated proofs of which are on record and could be produced in abundance.

It is only in the salt water that the salmon species, generally speaking, gain in weight after once quitting the smolt stage. During their sojourn in the sea after the first spawning, the growth of the grilse is exceedingly rapid, a considerable portion at least of such fish returning to the river in the summer and autumn with an increase in weight of from five to nine pounds. In twelve grilse of four pounds each which were carefully marked by Mr. Young when descending to the salt water, this was found to be the average increase on their return during the same season. Whether the growth rate is as rapid in the later stages of salmon existence we have no equally accurate means of judging; but reasoning from analogy it would appear probable that it decreases somewhat with the advancing age of the fish, and in very old specimens is perhaps comparatively trifling. Of such patriarchal salmon, the largest recorded to have been captured in British waters was a female fish of the weight of eighty-three pounds, which was exposed for sale in the shop of a London tradesman in the year 1821. Another of seventy-four pounds is alluded to by Pennant; Salter, in one of his works

on angling, refers to the capture of a salmon of seventy pounds in the Thames near Fulham, in the year 1789, 'which was subsequently sold to Mr. Howell, a fishmonger in the Minories, for a shilling a pound,' and during the present season, when fishing for ova on the Tay at Almond Mouth, a fish was netted considered to have *weighed over eighty pounds*, as it was six and a half inches longer than one of seventy pounds taken in the same river, of which there is a cast in the South Kensington Museum. It was a male fish in splendid condition, and measuring in length four feet eleven and a half inches, and in girth two feet five inches. As it was the close season the fish was, of course, returned to the water, and, as Mr. Malloch, who reports these particulars, observes, some one may get him with the fly later on. Whoever does will have his work cut out !

Very large salmon are, however, occasionally caught with the rod. One is noticed by Mr. Lascelles, as taken in Scotland, which weighed fifty-four pounds and a half. The late Sir Hyde Parker captured one in Sweden weighing sixty pounds, and a former Earl of Home took another from the same waters of the unequalled weight of seventy pounds within a few ounces.

I have never myself been lucky enough to kill a salmon over twenty-five pounds, but I have had my 'experiences' with fish which I know both from sight and 'feel' must have been nearer forty-five than thirty-five pounds.

I once had one on in the Usk from two o'clock till eight in the evening—for a good part of the time right under the point of my rod, a sufficiently powerful one, but could do absolutely nothing with him. When he chose to move to another pool he moved there, and when he chose not to move at all he stopped still. At last it began to get dark, and lanterns were brought from the village and dotted at short intervals up and down the river, which was now coming down in a heavy spate. Finally, at about eight o'clock, when the flood was 'roaring from bank to brae,' he made one splendid rush under Panscatlog bridge, where to follow was impossible—carried out the whole of the eighty or ninety yards of line, and rolled over the fall

below, as the keeper, who was watching, said, 'like a great porpoise.'

As to the question, 'Will salmon live and thrive entirely in fresh water—that is, in lakes and ponds which have no communication with the sea?' some observations will be found in previous editions.

The principal characteristics of the true salmon are:

Length of head compared with whole length of fish as 1 to 5. Body elongated; dorsal and abdominal line about equally convex. Lateral line near middle of body, dividing it about equally. Fleshy portion of tail slender. Scales, moderate sized, oval, and thin, easily removed when young, adherent when old. Teeth, stout, pointed, and curved, one line on each side of upper jaw, one line on each bone of palate, one line on vomer or central bone in roof of mouth when quite young (loses a large portion on first visit to salt water, and gradually all, or all but one or two on most forward point of bone), on line one each side of lower jaw; one line on each side of tongue (occasionally two lines on each side of tongue).

Fin rays: D. 13: P. 12: V. 9: A. 9: C. 19. Vertebræ, 60.

THE BULL TROUT (*Salmo eriox*).

Although differing in many respects from the true salmon, and constituting, of course, a distinct species, yet in many of its habits, if not, indeed, in all, the bull trout bears so close a resemblance to the latter fish that the history of the one may, to a great extent, be taken as the history of the other, and all the laws relating to salmon apply equally to the bull trout and their young, under whatever local names they may be known.

Like the salmon, the bull trout ascends rivers for the purpose of spawning, deposits its ova on similar spawning grounds, and after the process returns to the sea to restore its exhausted energies and increase in weight and bulk. So far as I am aware nobody has actually verified—that is by the same absolute means as in the case of the salmon—the periodical growth-rate of the bull trout between its various migrations. But as I have caught several hundreds of bull trout myself in the Usk averaging from four up to twenty pounds and never remember to have caught one of much less than the first-named weight, it is only reasonable to conclude that this is the size at which they

return to this river after their first salt-water trip—in other words, that it represents what would be the grilse stage in the true salmon.[1]

One reason why the natural history of the bull trout is not so well understood as that of the salmon is doubtless its comparative rarity; another is its inferiority both for the market and as a 'sporting fish.' Indeed, Lord Home, who writes with unequalled authority as regards the *Salmonidæ* of the Tweed, has put it on record that in his opinion 'a clean bull trout, in good condition, is scarcely ever known to take fly or bait of any description, and it is the same in the Esk at Dalkeith.' Lord Home continues: 'I believe I have killed as many—indeed, I may venture to say, I have killed more salmon with the rod than any one man ever did, and yet put them all together, I am sure I have not killed twenty clean bull trout. Of bull trout kelts thousands may be killed.'

I have been so far more lucky than Lord Home, having caught clean bull trout in good condition, and, indeed, with the marks of the tide lice still on them, not once, but, I may say, scores of times. They will not, however, in my experience, rise to the fly or take the minnow with any degree of readiness, and the bait with which I have had my success has always been a lobworm, used as described under the head of worm fishing for salmon.

The more common weight of the bull trout is under fifteen pounds, but it is sometimes taken weighing as much as twenty or even twenty-five pounds. When a clean fish of this size happens to be hooked it makes a splendid fight, dashing itself repeatedly into the air and yielding to its fate only after an exhaustive conflict, in which it is aided by the size and great muscular development of the fins, which are larger than those of the salmon.

Indeed, although, as observed, in a double point of view

[1] This average is larger than that of the bull-trout grilse in the Tweed, which are said to weigh from 2 to 4 or 5 lbs. Most probably, however, different rivers differ somewhat in this particular.

inferior to both the salmon and sea trout, if we can only induce him to try conclusions with us the bull trout is a splendid fellow—a 'foeman worthy of our steel.' There is a breadth of build and general strengthiness about him which is not belied by the gallantry and determination with which he shows fight when brought to bay. I think he dies harder than even the salmon—the Bayard of the water, *sans peur et sans reproche.* Indeed, he is better built for fighting in some respects, being shorter, thicker, and generally more muscular—more bull-like, in fact, in appearance, as his name denotes

I have pointed out the comparative rarity of the bull trout as contrasted with the salmon proper, but it is very likely that it exists in many more rivers than those chronicled by ichthyologists, and indeed that it is in many cases mistaken by local anglers for the salmon. The river in which it is best known and where its habits have been probably most studied is the Tweed, where it is as abundant as either the salmon or sea trout. Lord Home gives the following observations on the habits of the Tweed bull trout :

'The bull trout has increased in numbers in the Tweed prodigiously within the last forty years, and to that increase I attribute the decrease of salmon trout or whitling—for the whitling in the Tweed was the salmon trout, not the young bull trout, which now go by the name of trouts simply. The bull trout take the river at two seasons. The first shoal come up about the end of April and May. They are then small, weighing from two to four or five pounds. The second, and by far the more numerous shoal, come late in November. They then come up in thousands, and are not only in fine condition, but of a much larger size, weighing from six to twenty pounds. The bull trout is an inferior fish, and is exactly what is called, at Dalkeith and Edinburgh, Musselburg trout.

'The great shoal of bull trout not taking the river till after the commencement of close time, are in a great measure lost both to the proprietor and the public.'

Yarrell, however, speaking of the bull trout generally,

appears to differ from this view, as it is evident that if the fish do not run up the rivers till November, they spawn *later* than the salmon; whereas Yarrell asserts on the contrary that 'they ascend rivers for the purpose of spawning, in the same manner as the salmon, *but earlier in the season*; and the fry are believed to go down to the sea sooner than the fry of the salmon.' This discrepancy is possibly to be explained by the different habits of fish of different waters.

Amongst the localities in which the bull trout is known to exist may be mentioned some of the streams of Devonshire and Cornwall, the Severn, the Usk, and several of the rivers of South Wales (where it is called the Sewin), and according to Dr. Heysham, in some of the Cumberland waters debouching into the Solway Frith. In Ireland it occurs very generally on either side of the northern portion of the island; and Killala Bay, Donaghadee, Florence Court, Beleek, Crawfordsburn, Nanny Water, Ballyhalbert, and Dundrum are all referred to by Thompson as places whence he had obtained specimens. Sir William Jardine mentions the bull trout as being found in the Annan, Dumfriesshire; and Mr. Low recognised it as an inhabitant of the Loch of Stenness, Orkney. The Liddel, which runs through Roxburghshire, appears to have been once renowned for this fish. Sir Walter Scott, in his notes to the 'Lay of the Last Minstrel,' quotes an old rhyme celebrating the places in Liddesdale remarkable for game:

Billhope braes for bucks and raes,
And Carit haugh for swine;
And Tarras for the good Bull Trout,
If he be ta'en in time.

'The bucks and roes, as well as the old swine, are now extinct but the good bull trout is still famous.'

It has been asserted that the trout of the celebrated Coquet, commonly spoken of as 'Coquet trout,' are, in fact, the bull trout, but the 'Kelso Mail' criticises the assertion as being wholly inaccurate. 'The Coquet trout,' says the writer of the article,

'is the common yellow fin, or *Salmo fario*, and the bull trout are the salmon of the river. There are no true salmon, *Salmo salar*, in Coquet, the only sea fish frequenting the river being bull trout; but with Coquet-side fishermen the terms salmon and bull trout are synonymous: hence "salmon" with them means *Salmo eroix*, or bull trout, and "trout" *Salmo fario*, or common river trout.'

Principal Characteristics of the Bull-Trout.—Length of head compared to body only, as 1 to 4; general form of body similar to that of the salmon, but nape of neck and shoulders thicker, and fleshy portion of tail and base of each of the fins more muscular. Teeth of female smaller than those of male. Elongation of lower jaw confined to the males only, but not so conspicuous as in the salmon. Scales rather smaller and more numerous than those of a salmon of equal size. Colour: when in good condition, like that of the salmon trout; at spawning time, (in the *males*) head olive-brown, body reddish or orange brown; (in the *females*) blackish grey; in both fish the back fins reddish brown, spotted with darker brown, tail fins dark brown, the other fins dusky brown. Vertebræ commonly 59, occasionally 60.

Fin rays: D. 11: P. 14: V. 9: A. 11: C. 19.

The following were the principal dimensions of a very handsome specimen which I had sent up to me from the Tweed: Total length, tail fin included, two feet four and a half inches, girth at shoulder, just behind head, fourteen and a half inches, weight eight and a half pounds.

THE SEA TROUT OR SALMON TROUT
(*Salmo trutta*).

Passing now to the last of our silver or migratory group, we come to the sea trout, or as it is sometimes called salmon trout, *Salmo trutta*, a fish much more frequently met with than the preceding species and as a food fish ranking 'with, but after' the salmon, with which, also, owing to the general similarity of its habits, it is included in all statutory restrictions.

Under a separate heading in this article the marks by which the sea trout can be most readily distinguished from the salmon and bull trout are given in detail, and beyond this it need only be observed generally that in appearance it is

somewhat rounder or more tapering than either of its congeners, the form of the gill lids and proportions of the tail being intermediate between the two. The scales are also relatively smaller.

Indigenous in almost all salmon or bull-trout rivers, and frequently abounding in streams which produce neither the one nor the other, there is no fish that swims which, when in the taking mood, will rise so boldly at the fly, or make a pluckier or more brilliant fight.

In the division which I have adopted between the white or migratory species of trout and the yellow or non-migratory species, the sea trout is the only one about which any difficulty of identification is likely to arise. The difference in colour between the *fario* and the *trutta*—the one being silver and the other golden or yellow—is usually too obvious to admit of doubt; but, especially when confined for a long time in a lake or loch, sometimes the sea trout gets bronzed and acquires a colour not very unlike that of the common trout. If a doubt as to the species should thus arise a reference to the *teeth on the vomer or central bone on the roof of the mouth* will decide the point. These teeth in the common trout—as also in the great lake trout—run in *two* distinct rows, whilst in the sea trout they run only in a *single* row. It is to be observed, however, that teeth require to be closely examined, as in the case of the sea trout the points bend alternately to either side, so as to present rather the appearance of a thinly planted double row; whilst in the common trout the two lines of teeth are placed so that a *space* in one row has a *tooth* opposite it in the other, making the difference appear at first sight to be little more than one of comparative closeness in the setting of the teeth.

In regard to the position of these vomerine teeth, the engraving of the mouth of the common trout, given farther on in this article, is somewhat inaccurate, resembling, in fact, more nearly the appearance of the single row seen in the mouth of the sea trout.

The usual weight of the sea trout runs from one to three or

four pounds, but larger specimens are constantly met with; one, for example, a male, was taken in July 1840, at Sanstill fishery, on the Tweed, thirty-seven inches in length, twenty-two inches in girth, and which weighed twenty-four and a half pounds, and in November 1846, one of forty inches in length, weighing twenty-one and a half pounds, was caught in the Tame, near Drayton Manor, and presented by Sir Robert Peel to Professor Owen.

Scotland produces the sea trout in great abundance, and throughout almost the whole of Ireland it is widely distributed. In Wales also it is frequently met with, as well as in some of the Devonshire streams and in those of Cumberland and Cornwall. On the banks of the rivers falling into the Solway Frith the sea trout is called, in its grilse state, a hirling,[1] and in Wales and Ireland it commonly goes under the name of white trout. It is believed to be the 'Fordwich trout' of Izaak Walton, so named from a village on the Stour, near Canterbury, where it still maintains its reputation for being 'rare good meat'—according, at least, to the reports of those who have tasted it from the Ramsgate market. M'Culloch mentions that it is found in a fresh-water lake in Lesinore, one of the Hebrides, where it has existed for many years, precluded from ever visiting the sea, but apparently quite reconciled to its prison, and breeding freely.

If it could be really introduced and found to thrive and propagate in closed pools or lochs, what a splendid addition the *Salmo trutta* would be to our lake fish.

Principal Characteristics of the Sea Trout.—Length of head compared to body only, as 1 to 4; depth of body compared to whole length of fish also as 1 to 4. Teeth small and numerous, in five rows on upper surface of mouth, those on the vomer, or central bone in roof of mouth, generally extending some distance along it, the points turning outwards alternately to either side; one row on each side of under jaw, and three or four strong, sharp and curved teeth on each side of tongue. Lateral line very nearly straight. Scales adhering closely, in form rather a longer oval than those of the salmon. Colour

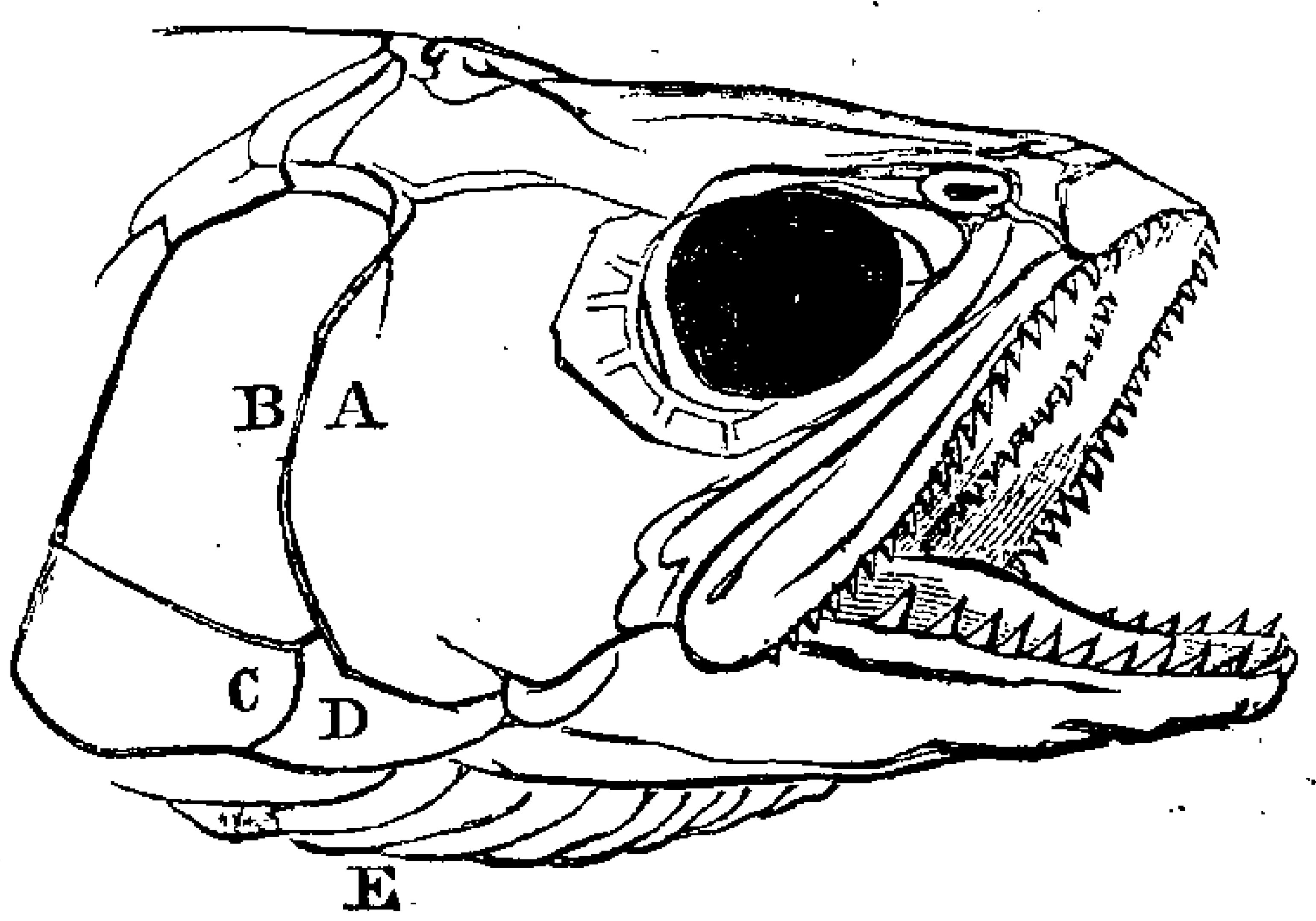
[1] In some parts of Scotland, as on the Lochy, for example, the young sea trout, or hirling, goes by the name of the phinnock, or finnock; and it is, I have every reason to believe, the 'red fin' of some of the rivers of North Wales—so called from an orange or reddy tip to the adipose fin.

when in season: upper part of head and body bluish black, lighter on sides, which are marked (principally above the lateral line) with numerous spots somewhat resembling in form the letter X. Lower part of sides and belly, cheeks, and gill covers silvery white; back fins and tail nearly same colour as back; pectoral fins small, and bluish white; anal fin and ventral fins white. Vertebræ 58.

Fin rays: D. 12: P. 13: V. 9: A. 10: C. 19.

DISTINCTIVE MARKS OF SALMON, BULL TROUT, AND SEA TROUT.

The points upon which ichthyologists principally rely in distinguishing between the three species composing the migratory *Salmonidæ* of the British Islands are the form of the gill covers, the arrangement of the teeth, the shape and relative position of the tail and of the fins, and the colouring.

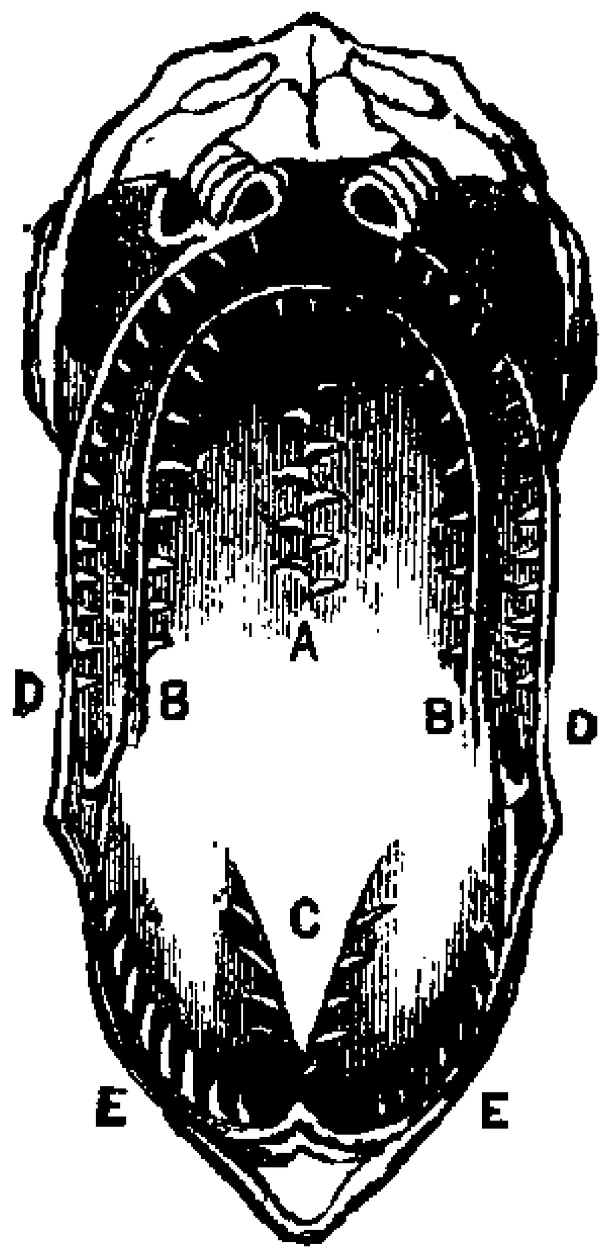


A represents the *pre-operculum*, or fore gill cover; B, the *operculum*, or gill cover proper; C, the *sub-operculum*, or under gill cover; D, the *inter-operculum*, or intermediate gill cover; E, the *branchiostegous* rays, or gill rays.

To begin with the form of the gill covers or *opercula*, which consist of four pieces, three movable, and one—the *pre-operculum*—fixed. These afford the readiest, and probably the surest mode of distinguishing between the true salmon, *salmo salar*, and the sea or salmon trout, *Salmo trutta*. In the former the hinder margin of the whole gill cover forms almost a semicircle, whilst in the latter it approaches more nearly a right angle, or a semicircle with a slice taken off the circumference above and

below. In both species the shape of the gill cover differs somewhat from that of the bull trout, and also from that of the yellow trout (*fario*), the shape of the gill cover in which last-named species is shown in the engraving on page 155.

The difference in the position &c. of the teeth, again furnishes a ready test for distinguishing the sea trout from the true salmon and from the bull trout. In the sea trout the teeth on the vomer, or central bone in the roof of the mouth (marked A in engraving) are more numerous than in either of the other species, and often remain, as shown, extending a considerable distance along



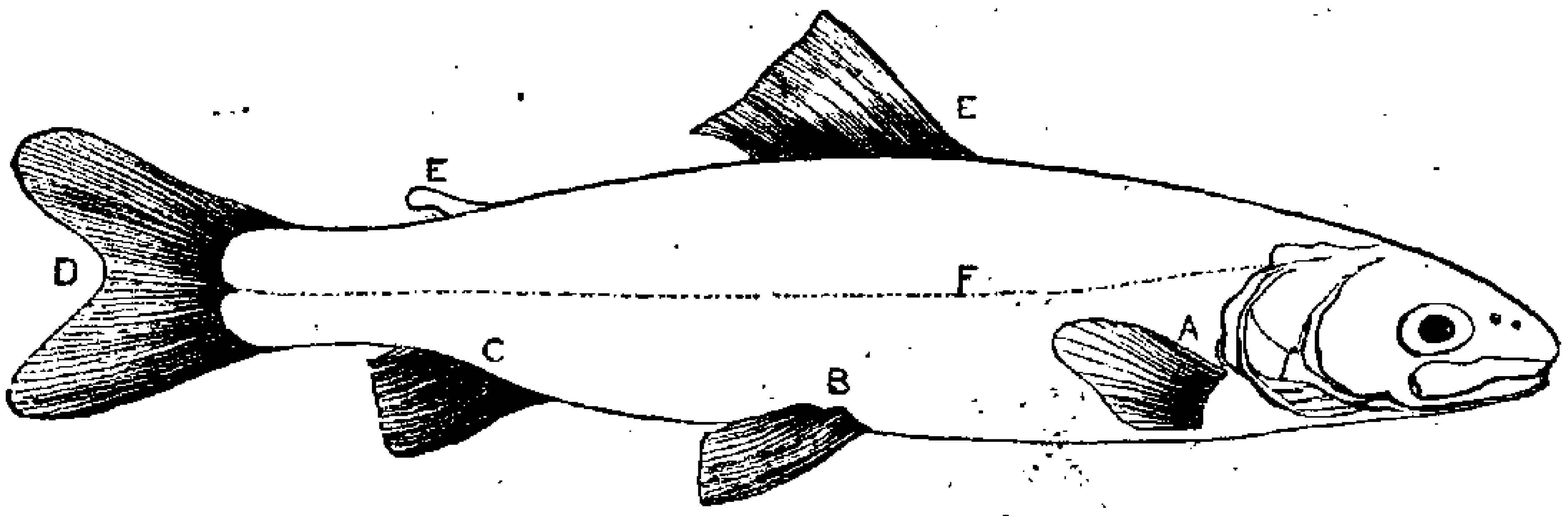
A, teeth on *vomer*, or central bone of the roof of the mouth; B B, teeth on right and left *palatine* bones; C, row of hooked teeth on each side of the tongue; D D, teeth on *superior maxillary*, or maxillary bones; E E, teeth on lower jaw, or *inferior maxillary* bones.

the bone, whilst in the true salmon and in the bull trout they are almost all lost upon the first migration to the sea, and only two or three left on the most forward end of the bone. Even these teeth, in very old fish, are frequently reduced to a single representative, or entirely disappear.

In the sea trout also, however, the teeth on the vomer diminish in numbers as the fish gets older, and will often be found in a cluster only at the end of the bone; but they are always retained in greater numbers than in the true salmon and bull trout. The teeth generally of the sea trout are also finer

and more numerous than in the other two species, the bull trout possessing the longest and strongest of the three fish, and the salmon those of medium size—short, stout, and pointed.

Thirdly, *as to fins*. The shape and size of the tail fins are a less certain test in some respects than the teeth, as they vary



A, the *pectoral* or breast fins (so called from their being placed on the breast or shoulder of the fish); E E, the *dorsal* or back fins; B, the *ventral* fins (named from their position on the belly); C, the *anal* fin (placed close behind the anal aperture); D, the *caudal* or tail fin; F marks the lateral or side line.

much in different stages of growth. They will, however, be found a great aid to other distinguishing characteristics. They are usually as follows:

SALMON.	BULL TROUT.	SEA TROUT.
Tail fin: deeply forked when young, less so at third year; at fifth year nearly or quite square.	Becomes square at an earlier period than in salmon, and afterwards gradually convex.	Less forked than in salmon of same age; becomes ultimately square. Tail shorter and smaller than in salmon.

The shape and position of the other fins likewise differ, as will be seen by a comparison of the descriptions which follow:

SALMON.	BULL TROUT.	SEA TROUT.
Dorsal fin: Hinder origin about half-way between point of nose and end of tail fin. Third ray longest.	Commences about half-way between point of nose and origin of upper tail fin rays. Base of dorsal longer than longest ray.	Hinder origin exactly half-way between point of nose and end of tail fin. Second ray longest; same length as base of fin.
Adipose fin: Hinder origin half-way between origin of last back-fin ray and end of tail fin.	Nearer to end of tail fin than to origin of last dorsal-fin ray.	Half-way between origin of last ray of back fin and end of tail fin.

To the above it may be added, that in the salmon the pectoral fin equals two-thirds of length of head, whilst in the bull trout it equals little more than half—the anal fin also in the former commencing about half-way between origin of ventral fins and origin of lower tail fin rays, and in the latter nearer to the tail. Lastly the fins of the bull trout are more muscular and larger in proportion to the rest of its body than those in either of the other species.

In regard to colouring, the bull trout is thickly spotted with brown over the back and sides both above and below the lateral line, and even to the tip of the dorsal fin, which in the salmon is seldom or ever marked with more than a few 'splotches,' and those close to the base of the fin.

In the sea trout the dorsal fin is generally spotted like that of the bull trout though not quite so thickly.

A comparison between the characteristics given of the salmon, bull trout, and sea trout, with those of the non-migratory division—the common or brown trout, the great lake trout and the charr—will probably enable the fisherman to distinguish readily between them. The general colouring, moreover, affords in most cases a good rough and ready guide: that of the first or migratory group is always more or less greyish silver, and that of the second golden or yellow—with, in the case of the charrs, an occasional dash of crimson and orange of various degrees of brilliancy on the belly.

The charrs are, unfortunately, so seldom captured by the rod and line that they are objects more of interest to the ichthyologist than to the fly fisher.

The Sea Trout is the last of the Silver, or Migratory, Group of British *Salmonidæ.* We now come to the second division, viz. the Non-migratory species of the family, in which are included the Common or Yellow Trout, *Salmo fario*; the Great Lake or Grey Trout, *Salmo ferox*; the Charrs, the Grayling, and some other local species of no interest from an angling point of view.

THE COMMON OR YELLOW TROUT
(*Salmo fario*).

This species, the mainstay and principal resource of the fly fisher, is so well known, and is so widely distributed over the whole of the British Islands, as to make any detailed description of its appearance or habitats superfluous. Indeed, so far as the former is concerned, it would be practically impossible; as its colour and shape—except in the points already referred to—are susceptible of infinite difference, and vary as much as the qualities of the waters (whether in sources or feeders), geological strata of the beds, and nature and quantity of food found in the brooks, streams, rivers, ponds, lynns, and lakes, where it is bred.

Inhabiting such an infinite range of varying waters this diversity of colouring is, in fact, a defence given by nature to the trout for its preservation. Were its colour more uniform or unchangeable, the fish would be so plainly visible in different waters or soils as to fall an obvious prey to its enemies, whether biped or quadruped. In fact, experiments have shown that the changes of colour are a question of minutes rather than of days and weeks. Upon its transfer from a light to a dark coloured vessel, or *vice versâ*, the hue of the trout undergoes an instant alteration, and in a very short time assimilates itself more or less perfectly to that of its new domicile. Thus, for instance, the trout of Lynn Ogwin, almost the whole bottom of which is formed of grass, have, when first caught, a brilliant emerald gloss over their golden and yellow tints; and although the waters are of the utmost clearness and the lake swarming with fish, I was never able in any one instance to distinguish these from their surrounding green. Again on the Spean Water, Inverness, there are several small tarns in which I have frequently taken fish almost the colour of ink; yet these tarns actually join the Spean, where many of the trout are of a fine rich yellow—the cause of the difference being that the

river has at this point a bed of gravel, whilst the tarns are floored with a deep deposit of bog mud. A similar peculiarity has been noticed as regards the black-moss trout of Loch Knitching; and Loch Katrine produces a small description of very dark trout, which probably owe their discolouration, as in many other lochs, to the drainage of the bog moors.

Even on different sides of the same river I have found complete differences in the colour and also in the edible qualities of the trout, depending on the nature of the bottom soil; and a similar example, in the case of the fish of a small Irish lake in the county of Monaghan, is mentioned by the author of 'Wild Sports of the West.' One shore was 'bounded by a bog, the other by a dry gravelly surface. On the bog side the trout are of the dark and shapeless species peculiar to "moorish" loughs, whilst the other affords the beautiful and sprightly variety generally inhabiting rapid and sandy streams. Narrow as the lake is, the fish appear to confine themselves to their respective limits—the *red* trout being never found upon the bog moiety of the lake, nor the *black* where the under surface is hard gravel.'

Notwithstanding, however, this almost infinite range of variety in the yellow trout, depending upon local circumstances of food, &c., we have only one really distinct species common to both running and still waters, viz. *Salmo fario*, and one indigenous to lakes and similar situations, viz. the great lake trout, *Salmo ferox*.

Dr. Günther, of the British Museum, has 'recognised' another separate species in the well-known Loch Leven trout of Scotland, to which he gives the name of *Salmo levenensis*.[1] I

[1] The Loch Leven trout spawn in January, February, and March. I have had opportunities of examining many specimens of the Loch Leven trout, and their characters agreed closely with those given by Dr. Parnell from a specimen one foot in length. Of these the principal were:

Head a little more than one-fifth of the whole length, tail fin included. Depth of body at the deepest part about equal to length of head. Gill cover produced behind; lower margin of operculum oblique; pre-operculum rounded; end of the superior maxillary bone extending as far back as the hinder margin of the orbit. Commencement of back fin half-way between point of upper jaw and a point a little beyond the fleshy portion of the tail. End of back fin even, sometimes concave. Pectoral fins pointed

was myself formerly of opinion, without perhaps sufficiently close examination, that there was probably ground for the distinction, but having since visited Loch Leven and examined a large number of its trout, I really do not think—with great deference to the authority of so distinguished an ichthyologist as Dr. Günther—that there is enough evidence for considering *Salmo levenensis* as other than a variety—and, it must be admitted, a very beautiful and 'sporting' variety—of the common trout. Its excellent flavour and sporting qualities, as well as, very possibly, the more permanent differences noticed by Dr. Günther, are probably due to the abundance of shell-fish on which it to a great extent exists. Some ichthyological authorities would make a distinct species out of the Gillaroo trout, &c., but the fact is all these variations are produced by the wonderful 'plasticity' of nature in adapting fish, as well as other animals, to the conditions of climate, food, &c., in which they have to exist. That, at least, is my opinion.

The remarkable variation, for example, in the Gillaroo consists in the thickening of the coats of the stomach, so as to afford increased muscular power for dealing with its peculiar shell-fish food. I have caught scores in Lough Melvin, and examined the so-called 'gizzards' of many, and I invariably

when expanded; in common rounded. Tail fin long, rather narrow, and concave at the end. Tail-fin rays much longer than in the common trout, and pointed at the upper and lower extremities, whilst in the latter they are rounded. Teeth stout, sharp, and curved slightly inwards, situated as in the common trout. In the specimen described by Dr. Parnell there were 32 in the upper jaw, 18 on the lower, 12 on each palatine bone, 13 on the vomer, or central bone in roof of mouth, and 8 on the tongue. Scales small, thick, and adherent, when dry exhibiting a small ridge in the centre of each, not perceived in the common trout: 24 in an oblique row between middle back-fin ray and lateral line. Pyloric cæca from 60 to 80. Colours: back deep olive green; sides lighter; belly inclining to yellow; pectoral fins orange, tipped with grey; back- and tail-fins dusky; ventral and anal fins lighter. Gill cover (in the specimen described by Dr. Parnell) with 9 round dark spots; body above lateral line with 70 spots, below it 10; back fin thickly marked with similar spots. Foreign extremities of anal and back fins without the oblique dark bands so constant and conspicuous in many of the common trout. Flesh deep red. The Loch Leven trout has never any red spots, and the common trout is scarcely ever without them. Fin rays: D. 12: P. 12: V. 9: A. 10: C. 19.

'These fish,' says Dr. Parnell, 'do not appear to be peculiar to Loch Leven, as I have seen specimens that were taken in some of the lakes in the county of Sutherland, with several other trout which were too hastily considered as mere varieties of *Salmo fario.* It is more than probable that the Scottish lakes produce several species of trout known at present by the name of *Salmo fario,* and which remain to be further investigated.

found traces of shell-fish in greater or less abundance. Lough Melvin is the 'head centre' for Gillaroo fishing, and anyone who wants to have good sport as well as ordinary lake trout fishing, with an occasional *ferox* or salmon, cannot do better than pay a visit to Mrs. Scott's moderately charging and charmingly situated hotel at Garrison, Beleek (co. Fermanagh). As to colouring, I consider the Gillaroo trout distinctly the most beautiful fish in the British Islands. It has been said to be recognised in Lough Neagh, the largest of the Irish lakes, as well as Loughs Boffin, Corrib, Mask, and some others, and, according to Stoddart, also in Lochs Muloch, Corrig, and Assynt in Scotland.

In a specimen examined by Mr. Yarrell, the number of rays of the back fin was less by two than in the more ordinary specimens of the common trout, but the numbers of all the other fin rays, as well as of the vertebræ, were identical.

Variations and deformities amongst trout have been noticed from time to time which their discoverers have doubtless been pleased to chronicle as separate species; for instance, there is the Botling, mentioned by Dr. Davy as inhabiting Wastwater, Cumberland, which attains a weight of ten or twelve pounds, and is found in the autumn ascending the lake streams for the purpose of spawning. In form it is short and deep, with the lower jaw much hooked, or curved upwards, and, when full grown, its girth considerably exceeds its length. In the arrangement of its teeth and spots it resembles closely the ordinary trout.

Another singular variety is the 'hog-backed trout' of Plinlimmon, a fish not altogether unlike the perch in form, and there is also the deformed trout of Lochdow, Inverness-shire, in which the lower jaw protrudes a long way beyond the upper. This fish was supposed to be confined to Lochdow, but I caught similar trout with the fly in 1862 in a mountain tarn of the same county, called Roy, or Roi, from which the picturesque little salmon river so named takes its source. The elevation of the loch above the sea level is considerable, and its appearance striking,

as it is situated directly below an almost perpendicular cliff, at the base of which it forms a sort of lynn or caldron. In some parts it is very shallow, but in others the water is black, and apparently of immense depth.

To the trout of Carraclwddy pools, near Rhayader, has been attributed the singular propensity of *croaking*—indeed, the 'croaking trout of Carraclwddy pools' are regarded as amongst the local lions. A writer who visited the pools some years ago as an investigator avouches the croaking. 'When first taken,' he says, 'and even after they have been in the basket for some time, they do decidedly utter a peculiar croak, which the natives attribute to their having been bewitched by the monks of Strataflorida Abbey; others again assert that it is an attempt to speak Welsh!' Owing to the colour of the water which filters through the peat these trout are nearly black.

Instances of such varieties might easily be multiplied, but whenever there can be any reasonable doubt as to their specific distinctions I am all for simplifying rather than for complicating. The fewer unnecessary species that are created by ichthyologists, the more chance has ichthyology of becoming generally popular, especially amongst fishermen.

In regard to each of the two admittedly distinct species—*Salmo fario* and *Salmo ferox*—a few general observations will probably enable the reader to distinguish them without the necessity of resorting to a minute comparison.

We have not in the present case the same prominent differences in the teeth, shape of the gill covers, &c., by which the migratory trout and salmon are so clearly defined, and for ready points of distinction we must rely upon colour, external proportion, and localities; these however will generally be found sufficient for the purpose. Thus:

The common yellow trout breeds indifferently in brooks, rivers, and lakes, whilst the great lake trout is never found except in or close to lakes (generally large and deep).

The common trout is almost always spotted over the body with crimson, the spots in the great lake trout being in each case surrounded by a paler ring, sometimes of a reddish hue.

The flesh of the great lake trout is generally orangey-red, and that of the common trout pink or white, according to the nature of the water and the condition of the fish.

The disproportionate size of the head in the great lake trout is very remarkable, it being little less than one-fourth of the total length of the fish, tail fin included; whilst in the common trout it is not much more than one-fifth. The length of the head in the great lake trout is also *greater* than the depth of the body at the deepest part, whilst in the common trout it is usually *less*.

The tail fin in the great lake trout is nearly 'square' at the end, and is considerably wider than the widest part of the body, whereas in the *fario* it is very obviously narrower than the same measurement.

It may be further noticed as a mark of distinction between the two species of Trout and their congeners, the Charrs, *inter se*, that besides the orange and red colours of the latter, Trout are recognisable by the characteristic of having two complete rows of teeth on the vomer, or central bone in the roof of the mouth, whilst in the Charrs the vomer has only a few teeth, and those on the most forward part. The Grayling, though belonging to the same family, is yet so totally different in shape, colour, &c., that it is never likely to be mistaken for any of the other species.

By a little attention to the foregoing points the young fisherman will speedily acquire a knowledge of the proper names of the several species of *Salmonidæ*, and be able to recognise them when he sees them on the river bank.

As to the size attainable by the trout under favourable conditions it is very difficult to speak with certainty, the more so as, owing to the very general absence of ichthyological knowledge on the part of fishermen, they are very apt to confound the yellow trout (*Salmo fario*) with the Great Lake trout (*Salmo ferox*), and, perhaps, not unfrequently also with one or other of the migratory species which have got bronzed by remaining a considerable time in fresh water.

Amongst rivers producing exceptionally large trout the

Thames is, of course, one of the best known, and here fish up to ten pounds or twelve pounds weight are by no means rare. Indeed, I have before me an authentic record of a trout, taken in the Thames, which weighed twenty-three pounds and a half, and which is now, or was some years ago, preserved at the cottage of George Keen, fisherman, of Weybridge. This fish was taken at Shepperton Weir, if I remember rightly, with a spinning bait. At any rate the specimen is, no doubt, still extant to bear testimony in favour of its own authenticity. I have referred to another at Laleham, which weighed twenty-one pounds, and one of sixteen pounds and a half was taken by Mr. John Harris, landlord of the 'Lincoln Arms,' Weybridge, at Laleham, in 1822.

Many other English waters besides the Thames produce very large trout. I have caught some heavyish specimens myself in the Hampshire Avon, above Ringwood, and at Herdcott House, near Salisbury, there is preserved the skin of a trout taken from a tributary running through that town, which weighed twenty-five pounds, and measured four feet two inches and a half in length, its girth being two feet one inch.

This leviathan is probably the fish alluded to in the 'Transactions of the Linnean Society' as being caught on the 11th of January, 1822, in a brook some ten feet wide at the back of Castle Street, Salisbury.

'A trout which weighed twenty-seven pounds was landed a few days ago by an angler in Lord Normanton's Somerley water in the Hants Avon. This exceptionally fine fish was despatched as a present to the Speaker.'—*World*, July 10, 1889.

Lord Craven had some years ago a fresh-water trout of seventeen pounds from his stews in Berkshire. The trout had been known in the stew for eight years. In the neighbourhood of Downton on the Avon, a trout was caught with the fly by a Mr. Bailey which weighed fourteen pounds; and in a small tributary of the Trent, at Drayton Manor, one was taken exceeding in weight twenty-one pounds. A portrait of this fish is still in the possession of the family of the late Sir Robert Peel. A male fresh-water non-migratory trout of thirty pounds

weight, from Lough Neagh, Ireland, was cooked at Brooks's Club, in October 1832. It was beautifully spotted, and its flesh of good colour and flavour. The length of this fish was forty inches, and its girth twenty-four inches.

But here the difficulty above alluded to in distinguishing between the specimens of the *Salmo fario* and the *Salmo ferox* occurs, and in the absence of scientific verification leaves it in doubt to which of the two species this monster trout may have really belonged.

This confusion appears to extend sometimes even to the salmon, for, when I was last at Staines, there was at the Swan Inn, a picture of a huge Thames trout which was taken at Shepperton, by Mr. George Marshall, of Brewer Street, London, on the 3rd of October, 1812, with a single-gut line and no landing net; weight twenty-one pounds. The following was the subscription: 'A Thames *Salmon*!' The picture, which was not badly done, represents all the usual characteristics of a large Thames trout, except the tail, which was drawn square at the end; from the age of the fish I should naturally have expected it to have been round. . . . Possibly this Thames trout had not eaten enough whitebait to develop aldermanic proportions.

The trout is very rapidly affected by the nature of its food, as is well known to those who have compared the flesh of trout after and before the 'May-fly season.' Some interesting experiments, by Mr. Stoddart, made in order to ascertain the relative fish nourishment to be extracted from different descriptions of food, have been put on record. The trout to be experimented upon were put in three separate tanks, and in one the fish were fed daily upon worms, in another upon live minnows, and in the third upon flies of various kinds. The result was, that the fish fed on the worms grew slowly, and had a lean appearance—those dieted upon minnows became much larger, whilst such as were fattened wholly upon flies attained in a short space of time extraordinary dimensions, weighing *twice as much as both the others put together*—the bulk of food eaten

by them being actually less. On another occasion trout were kept for many years in a store stream, and tested with various kinds of diet, when it was ascertained that in some instances the increase in weight was as much as nine pounds in four years (or from one to ten pounds).

It is evident from these experiments that fish and grubs bear no comparison with insect food in point of nourishment, in consequence, no doubt, of the amount of phosphate of lime contained in the latter; and of the insects specially contributing to fish food, probably most nutritious of all is the May fly, which, when in the larval state, works havoc amongst the trout ova on the spawning beds.

Recent piscicultural experiments have demonstrated the great value of the fresh-water shrimp also as an article of fish diet, and for feeding young fry on.

It was once my good fortune to have an opportunity of verifying the growth rate of trout when fed upon this insect which abounds in almost every stream and ditch where the water is not too turbid. In its general structure the fresh-water shrimp bears some resemblance to the common sand hopper to which it is closely allied, and its movements in the water increase the similitude. The author of the 'Fresh and Salt Water Aquarium' (the Rev. J. G. Wood, M.A.) says they act much like fish in their habit of keeping their heads up the stream, and in their general conduct look something like the fry of various fish.

Sometimes they make their way up the stream by clinging to the stones and other objects that form the bed of the stream, making quick darts forward, and then holding tightly to a stone until they choose to make a second dash onwards. When they have gone up the stream as far as they think proper they loosen their hold and come drifting back again, sometimes rolling over and over, but generally contriving to keep their heads pointing up the stream. In fact, they appear to amuse themselves by this action, just as the gnats amuse themselves by dancing up and down in the air.

The food of the fresh-water shrimp is usually decaying animal

matter, and it can be attracted by sinking a piece of half-putrid flesh in the water. When it is not engaged in active exertion, it retires to some little crevice at the side of the stream, whence, however, it keeps a careful watch so as to be able to dart out as soon as it sees anything eatable. When removed from the water the little creature is quite helpless, lying on its side, and merely spinning round and round in its struggles—a habit which has gained for it the title of fresh-water shrimp.

But to my feeding experiments. At Encombe, in Dorsetshire, the seat of the Earl of Eldon, there is an artificial pond of two or three acres in extent facing the house. The pond is paved with marble at the bottom and sides, and is supplied with water from a small fountain fed from a spring in the neighbouring valley, carried by an artificial tunnel under some high hills. The pond is, for all practical purposes, stagnant; the fountain's supply not being more than equivalent to the summer evaporation. From 1862 to 1864 this pond was drained off and left absolutely dry, in order to kill the weeds and clean the bottom. In 1864 the water was turned in again, and in August of that year a number of artificially reared trout of the same season's hatching, about three-quarters of an inch long, were put into the pond. In August 1866, the pond was again dried for cleansing purposes, when it was found that the trout had grown in the space of two years to an amazing extent—four or five pounds being the smallest size, and a weight of six pounds ten ounces having been attained in several cases.

When visiting at Encombe in September of the following year, I examined the pond at Lord Eldon's request with a view to ascertaining to what cause, in the absence of any artificial feeding, the extraordinary growth rate was to be attributed. With the aid of a bucket and a rope, the explanation was not hard to find: *the whole pond was simply swarming with water shrimps*, and on questioning the keeper he assured me that when the water in the pond was let off there were literally cart-loads of these insects. My informant as to the facts and dates

was Lord Eldon, who also examined the keeper in my presence, as to the circumstances, whose account again was confirmed in every respect by the corroborative testimony of Mr. Dickson, one of Lord Eldon's stewards, who was cognisant of all the facts of the case, and was also present and saw the fish weighed when caught.

The only outlet to the pond is a small drain at one end up which nothing could practically pass, even if there were any trout streams at hand with which it could be supposed to communicate.

It may be mentioned that the weight of the trout at the end of the first year was from a quarter of a pound to half a pound.

In the 'New Sporting Magazine' an interesting experiment in trout growth was chronicled. The progressive weights of a female fish, regularly fed and weighed during six consecutive years, were as follows:

Date of Weighing	1835	1836	1837	1838	1839	1840
	lb. oz.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.
April 1 . . .	0 12	1 12	3 4	5 4	7 0	7 4
October 1 . .	1 4	2 0	5 0	5 12	7 8	7 0

At the end of the six years the fish being observed to be falling off in colour and condition was killed, when it was found to weigh less by 4 oz. than it had done six months previously.

The advent of the May fly gives the signal for the carnival of the trout to begin, and they may be seen almost with their noses out of water lying in wait to gulp down the succulent morsels which the stream floats over them. It seems, therefore, that the bliss ascribed by the poet to our

> . . . painted populace
> That live in fields and lead ambrosial lives

is not without its alloys.

The voracity of trout when in pursuit of its favourite food sometimes leads to curious results. Dr. Gillespie once saw a

swallow from above and a trout from below dart upon the same May fly: down came the swallow, and up came the open mouth of the trout, into which, in pursuit of its prey, the swallow pitched its head. The struggle to get separated was short, but severe; and the swallow was twice immersed, wings and all, before it disentangled itself from the teeth of the trout. I have myself known both swallows and bats to take the artificial fly, and after an aerial combat to be ultimately netted *secundum artem.*

Although *Ephemera vulgaris* has been called the May, or 'Day,' fly—in common with its congeners, and, indeed, insects of all kinds, it appears in greater numbers and exhibits increased activity towards sunset. This, consequently, is usually the best time for taking trout with the artificial fly, and especially for the heavy fish, which until then lie concealed amongst roots, under deep holes, and in other similar shelters. The 'next best' time is during the first freshness of the morning, before the sun gets much power.

The fly fisher, in fact, cannot be too early or too late at the water; and I have often killed the best fish of the day when it was so dark that I could hardly see my rod, and had entirely lost sight of my flies. At both these times larger sized flies may be used than at others. Small flies are preferable on hot windless days, or when the water is bright and low. When water is much discoloured with rain so as to become opaque, fly fishing is useless. The two golden maxims are, first, to keep as far from the bank, and as much out of sight as possible; and, secondly, always to use finer tackle than anyone else on the river—and (your skill being equal) you will always catch the most fish.

The latter end of October or November, and thence up to the beginning of February, is the usual spawning time of trout—the operation, however, in each particular fish continuing only about eight days; and at this period the under jaw in old males exhibits in a modified degree the elongation and upward curving characteristic of the male salmon at the

same time. From the experiments of Dr. Davy, elsewhere commented upon, it appears probable that at least a proportion of trout, like some salmon, spawn only in alternate years. The situation chosen for, and the mode of conducting the spawning process are very similar to those noticed in the salmon—the eye, however, of the young fish becoming visible in about three weeks, and the egg being usually hatched in from forty to fifty days.

The yolk bag is absorbed in from three to five weeks; and in six weeks or two months the young fly are about an inch long and able to shift for themselves. From this time their growth is rapid or slow according to the nature and quantity of their food and other local circumstances.

THE GREAT LAKE TROUT. (*Salmo ferox.*)

This fish is the 'Ullswater trout' and 'grey trout' of the English lake district, and the 'Buddagh' of Lough Neagh, where the smaller fish bear the local name of 'dolachans.' Though probably distributed throughout almost all the larger and deeper lakes of Scotland, it is, perhaps, best known amongst fishermen as the species for which Loch Awe is celebrated. It is found, to my own knowledge in Lochs Ericht, Lochy, Garry, and Laggan, and has also been recognised in Loch Shin, Loch Rannock, in Lochs Loyal and Assynt, and amongst some of the Orkney and Shetland Islands.

Besides Lough Neagh, the Great Lake trout is an inhabitant of all the largest Irish lakes—Loughs Mask, Melvin, Earn, Corrib, &c.—and is, in fact, almost wholly confined to similar great lakes and deep extensive tracts of water, where it reigns in more or less solitary grandeur, never leaving the lake except for the purpose of spawning—a process which commences about September or October—and then seldom venturing far up or down the tributary lake streams. In the river Awe, for example, the outlet from the lake best known in connection with

this species, they seldom pass the main 'hang or throat' of the river or one or two streams in connection with it.

I believe Great Lake trout to be essentially night feeders, and that during the day they lie hidden under rocks and in holes in the deepest water, only venturing into spots that are 'fishable' at the approach of evening. This is, perhaps, more an act of necessity than of voluntaryism on the part of the lake trout. Its food—or at any rate a not unimportant part—consists of small fish; these are not to be found at any great depth of water, but, on the contrary, on the sloping shores, up which, therefore, the trout comes in search of them, stopping short of the shallows. Its appetite is prodigious—the stomachs of the specimens that I have caught having been constantly found literally gorged with food—indeed, the specific name, *ferox*, has been given to it in consequence of its fierceness and voracity, which are such that, having once seized a bait, it will, like the pike, allow itself to be dragged merely by its 'holding on' for forty or fifty yards, and when accidentally shaken off will immediately seize it again.

I cannot forbear quoting here some observations on the habits of this fish from the pen of an old friend of mine, now no more, but whose delightful articles on fishing, under the signature of 'Autochthon,' will, doubtless, be remembered with pleasure by many readers of these pages. After alluding to the question which ichthyologists have raised as to the distinct species of the Great Lake trout, he continues:

Till the exigencies of an exact science are adequately worked out, it must suffice to assume here that there is such a being as the Great Lake trout, distinct from the other species and varieties of the *genus*. . . .

Ferox is quite an epicure in his diet, and playful as a kitten on his own domestic hearth. In no stage of his existence can he well be confounded with his cousins of the river. Even in his infancy there is a breadth and freedom of outline in his configuration, which distinguish him at once from relatives of the same age in brook or streamlet. When viewed playing at their favourite game

of entomology, one of them exhibits a promise of future expansion never presented by the other. Not but that the latter, under favourable circumstances, is capable of reaching a considerable weight and size; but the larger he grows the less he really resembles the Great Lake type. His increase is lateral rather than longitudinal, as if the vertebræ refused to be parties in the process; and I have seen quadrilateral monsters of this type taken in small bog lakes, which weighed from nine to ten pounds, though no more than a dozen or fifteen inches long. But they were nasty tenchy creatures to look at, bad for sport, and worse for the table.

Our old friend *ferox*, notwithstanding his bad name, never makes a beast of himself in this fashion. No matter to what stature he grows, he never, till age overtakes him, loses his noble athletic and artistic proportions. In these characteristic qualities, he vies with *salar* and *trutta* themselves. Into rivers or brooks, except for the purpose of making them tributary to the propagation of his young, he never condescends to wander. Even in the lower reaches of rivers discharging into the lakes he inhabits, I have never met him in the summer months. Neither will he answer the call of inquisitive naturalists who expect to find him at home in small loughs, though contiguous to or connected by stream or river with large ones. Elbow- or, more correctly, fin-room he must have, or he will not prosper. There would appear, indeed, a certain ratio always to exist between him and the extent of water he requires. In this he, of course, only conforms to the supposed law of harmony which is said to prevail between all organisms and external circumstances. But why other little fishes in the same waters do not conform in the same way the philosophers do not tell us. It is probably certain, however, that in lakes less than three miles long, and half that in width, a genuine specimen of the *ferox* will not be found. The physical features, too, of the ample basin he loves to sport in, besides mere extent, have doubtless much to do with his health and happiness. Shingle beaches, marly bottoms, precipitous rocks, fathomless water valleys, and corresponding elevations of sharps or sunken islands, to which in the summer he resorts to have a charge at the sticklebacks, or a tumble at his favourite ephemeridæ, constitute some of the domestic requirements for his full development. As a variety he has no objection to a certain amount of bog shore; but it is obvious it does not agree well with his constitution—his fine colours suffering there, and his whole physiognomy becoming bilious and jaundiced.

If brooks or rivers are not at hand, he and madam *ferox* provide heirs to the estate in some nice gravelly or sandy creek of the lake. For this I can answer, having frequently been a witness of their connubial happiness, standing with hymeneal torch in hand over the nuptial bed on a dark November night. How many seasons the amiable couple may live to visit the gravel beds is rather a difficult question to answer. The registry of births, deaths, and marriages in such remote and obscure places as the depths of a 'great lake' furnishes but doubtful data for the statistics of the ages of the population. Neither have we, in this case, the 'equine marks' of the teeth, or the 'annual vegetable rings' to appeal to. The probability is that the happy pair live to a good round age, though it might be imprudent to reduce it to figures. The pounds avoirdupois which they are found to weigh, after they attain a respectable size, may possibly give a fair approximation to their respective ages.

Sooner or later, however, the day of decline arrives. Fly fishing or trolling, I have hooked during the season occasional specimens of a long, tapering, large-headed animal; all skin, bone, and fins, like a flying fish, but languid in his movements, voracious in his appetite, and seemingly indifferent to his fate. Shall the melancholy fact be recorded?—it is our once gallant friend, *ferox*, who would in better days run out forty yards of line in a breath, spring from the lowest depths of his domain above the surface with fly or roach in his mouth, and contemptuously turn up his nose half a dozen of times at a net or gaff; but now, alas, wabbling about like a miserable snig in his dotage and decrepitude! And as if this were not sufficient humiliation for the pride and paragon of inland waters, the rustic fishers, no more respectful of his character than the ichthyologists, have combined to call him in this state a 'piper.' *Date obolum Belisario*—gently remove the hook from his aged jaws; return him safely to his native element, and crown the deed of charity by sending after him as many loaches as you can spare. When you next visit the lake you will probably witness his obsequies performed and his bones picked by a merciless group of seagulls and scarecrows, screaming and howling over his remains, as they are buffeted about by the waves. Such is the natural end of *ferox*—full of indignities, indeed, but from which it is consoling to reflect that the insensibility of death has plucked the sting!

The food of this distinguished member of his family, like his

place in systematic arrangements, has been a matter of doubt and dispute. That his whole bill of fare cannot be correctly filled up is very probable. But sufficient data, I think, exist to make out a tolerable *carte* of his favourite dishes. Oh ! those words of learned sound, and little meaning, that must be used to describe this food in the jargon of science, make one almost shudder. That he is, then, *insectivorous*, *vermivorous*, *molluscivorous*, *piscivorous*, and probably *herbivorous*, is all but certain. I have taken him with at least twenty different kinds of lake flies. I have seen him in his junior state, dragged up like a malefactor amongst slimy eels on a night line baited with worms. He has risen to my hook baited with five species of little fishes—namely, the loach, stickleback, fry of trout, and pike, and the gudgeon. His addiction to these dainties has been proved to me numberless times by a very unwilling visit to my net.

There is, however, so far as I have been able to observe, one condition necessary to his indulgence in these luxuries. They must be in a comparatively minute form, and presented to him on a link of clear, clean gut. As a general rule, the limit of his taste in this respect does not exceed baits of three or perhaps four inches. He must be hard up for a dinner if he goes beyond these dimensions. To be sure it has been stated—what, indeed, of fishes has not?—that, like the pike, he attacks prey of a considerable size. Possibly this may be so. . . . Yet I have trolled with pike tackle and larger baits, how often I know not; but never, in any instance, did *ferox* favour me with a call while engaged in this kind of work.

Of his feeding on small shells and larvæ, which are to be found in large quantities on the bottom of lakes, the evidence, though inferential, assumes a look of certainty, on examining the contents of his stomach. The *débris* of these semi-digested creatures is there to be seen and felt clearly enough. Amongst the mass are traces of apparently green vegetable matter; but whether these are the remains of a salad of aquatic herbs is problematic.

Whatever be his food, there is no doubt that the Great Lake trout will attain, under favourable conditions, to a very great size, though I have never happened myself to meet with any remarkably large specimens, either alive or stuffed, nor do I find any such authentically recorded. Stoddart mentions one

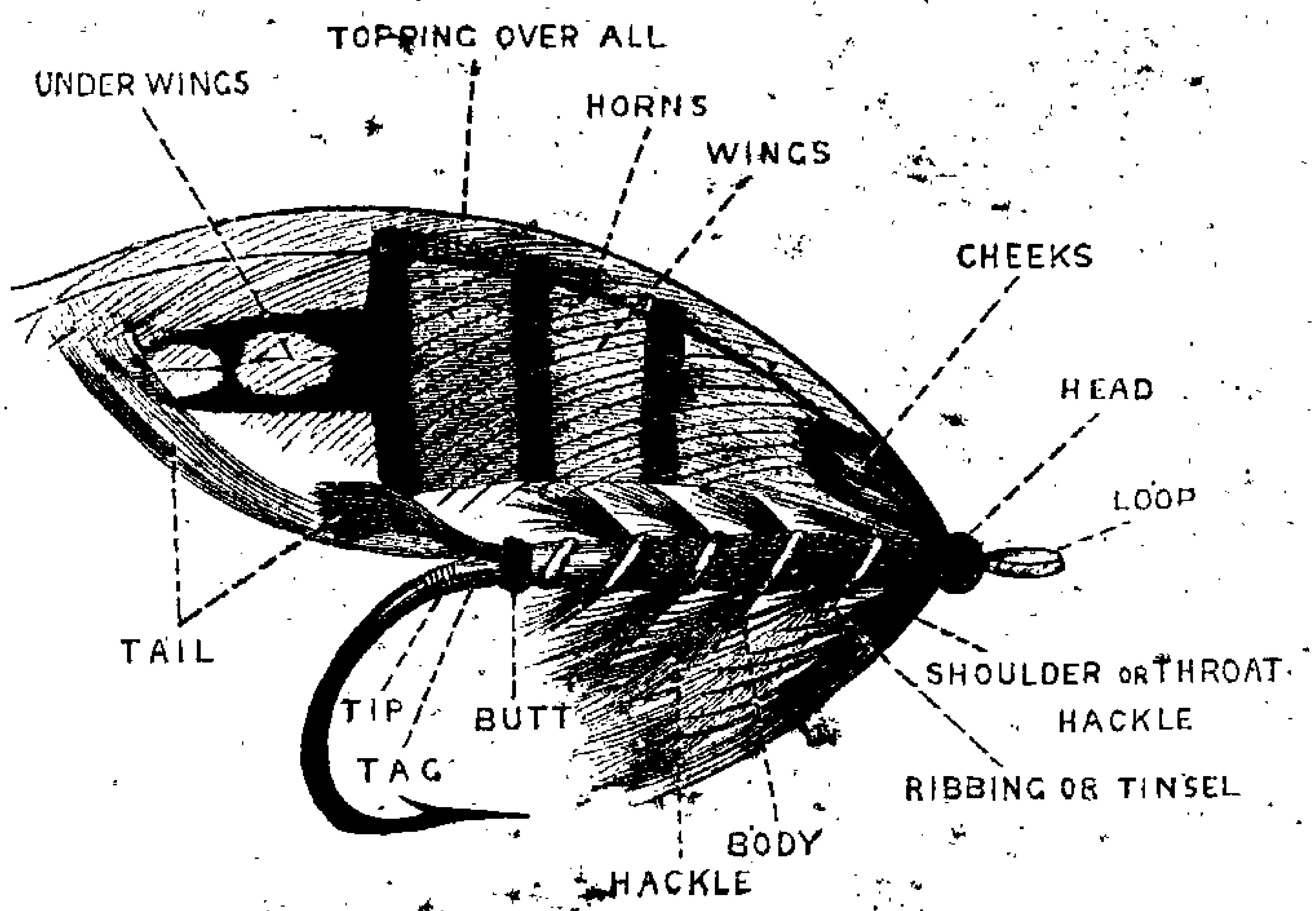
which he saw and weighed himself that was a trifle over nineteen pounds. This was taken from Loch Awe. I remember, however, in Windermere, where I used to go out occasionally night-trolling for *ferox*, the fisherman would entertain me with stories of monster fish taken within his knowledge, beginning, I think, at about twenty pounds, and progressing night after night—perhaps to stimulate my flagging energies—until I should say that the limit reached by the chronicle attained something-like thirty-five or forty pounds.

In the neighbourhood of Loch Awe there are also traditions of exceeding giants—twenty-five, thirty, thirty-five pounds—but these are not to be found in the records of any living angler, and when we hear yarns about these leviathans caught by the fishermen of a former generation, we are reminded of the Scotchman's retort as to the size of the fish caught by his rivals: 'They're nae bigger fish, but only bigger leers.' In some of the continental and American waters the above weights, exaggerated as they doubtless are, are dwarfed by comparison into insignificance. Lakes Michigan and Superior abound with monster trout of such a size as to set at defiance all attempts to capture them with rod and line. One of the smaller sized of these fish (weighing only seventy-two pounds!) was, however, actually caught by a fisherman in Lake Huron. Some curious facts respecting the habits of the Huron trout are mentioned by Featherstonhaugh in his 'Canoe Voyage up the Minnay Sotor.' 'Upon one occasion,' he says, 'Mr. Riddle caught one of the great trout of this lake, which when it was drawn up, had a large white-fish (*Coregonus albus*) in its throat, with the tail sticking out of its mouth, whilst inside the trout's stomach were two more white-fish, each weighing about ten pounds. In the lake of Geneva the trout run also to a monstrous size, but whether they are identical with the *Salmo ferox* is very doubtful. Formerly it was supposed that they were, but Agassiz pronounces to the contrary. Dr. Henry Bennett, of Mentone, is one of the few Englishmen that I know personally who has had any sport in trolling for these Geneva trout. His description of

his tackle and the weights he used to lead his line, was unique.

In Sweden, a writer, formerly well known to readers of angling literature under the *nom de plume* of 'An Old Bushman,' gives thirty pounds as a weight frequently attained by the Great Lake trout in the waters of that country. The marks by which he distinguished the *ferox* from the *fario*, when of a greater weight than, say, eight or twelve pounds, were 'the thick clumsy form, the great square tail, and the dull bluish steel colour of the body, with but fewish spots.' His conclusion, however, it should be stated is rather in favour of the lake trout being merely overgrown specimens of the *Salmo fario* than distinct species, an opinion boldly advanced also by that thoroughly practical fisherman, Mr. Thomas Tod Stoddart, in the teeth of Yarrell, Couch, Selby, Wilson, Jardine, and other ichthyologists.

In the parr or early stage of growth it is very difficult, if not impossible, to distinguish between the young of the *Salmo fario* and of the Great Lake trout.



NAMES OF THE DIFFERENT PARTS OF A SALMON-FLY.

In order to an adequate comprehension of the theory and practice of fly fishing, some general acquaintance with and knowledge of the art of making and using the tackle employed, as also of the habits and history of the several fish it is proposed to 'angle' for, are clearly *desiderata*. They are, in fact, the alpha and beta of the business, the ultimate 'catching' playing the part of omega.

These two important preliminaries being now, however, supposed to be more or less mastered, and the neophyte having become to some extent a naturalist as well as a fairly good judge in the matters of rods, lines, hooks, &c., the next point is to apply his knowledge to the practical business of fly fishing, beginning, as is but respectful to the king of fresh waters, with fly fishing for Salmon. This subject, for the reasons stated in my Prefatory Note, I have committed to other and more orthodox hands.

A safer pilot through the shoals and quicksands of the art than Major Traherne, or a more experienced and practical exponent of its mysteries, cannot be found within the 'three seas that girth Britain.' A diagram indicating, for purposes of reference, the names of the different parts of a salmon-fly will be found on the preceding page.—H. C.-P.

SALMON FISHING WITH THE FLY.

ALSO A FEW NOTES ON FLY FISHING FOR SEA TROUT.

It is with great pleasure, although with considerable diffidence, that I accede to a request, made in very complimentary terms by Mr. Cholmondeley-Pennell, that I should write an account of my experience in salmon fishing; and I am induced to do so in the hope that it may be instructive to gentlemen who are inexperienced in the art, and also to a certain extent interesting to the angling public.

There are certain well-known and established facts connected with salmon fishing that need no mention on my part, and I will endeavour to confine myself, as far as I can, to the relation of that which I know of my own knowledge. During an experience of over thirty years, in England, Scotland, Ireland, and Norway, I have had most favourable opportunities of studying the habits of the salmon and the art of fishing for him, and, if any information I am able to give should prove useful to my brother fishermen, I shall be amply repaid for my trouble.

All the knowledge we possess of the habits of the salmon has been acquired during that period of his life which he passes in fresh water. We know nothing of his habits during his sojourn in the sea, except that at certain seasons of the year he feels his way along the coast until instinct teaches him he has found the estuary of the river he has been bred in, and he then makes his way up it. From this time until, in the natural course of events, he returns to the sea, we have many opportunities of studying his habits, and we get to know certain facts, from which we draw our own conclusions. We start theories without end, some of which, after a short argument, will be found utterly baseless; but others seem more plausible, and have a certain amount of evidence to support them, such as may make it reasonable to assume that we have arrived at something like a near approximation to the truth.

We know a salmon enters fresh water at certain seasons of the year for the purpose of propagating his species, that sooner or later he makes his way to the locality where instinct points out to him he is to deposit his spawn, and that on his journey upwards he will occasionally take whatever bait is offered him by the angler. When the time comes he deposits his spawn, after which he gradually makes his way down the river and re-enters the sea. The sea is his native element, and I think it must be taken for granted that he feeds voraciously during

his sojourn there : in fact, he must do so, otherwise he could not grow so rapidly or attain such condition in the short time it is known he has to stay there. Nature has provided him with a formidable set of teeth, and it may be presumed he makes the best use of them.

When he first enters fresh water he is in his prime, and in the full glory of his strength. Doubtless instinct teaches him not to leave the salt water before he has attained this condition that he may be able to surmount the difficulties he will have to encounter before he can reach his spawning ground. A half-conditioned, ill-fed fish could not accomplish this : his strength would be exhausted before half the journey was completed, and he would probably be no more seen. A fish in this condition is seldom caught by nets in fresh water or on the sea-coast.

There is great difference of opinion as to whether or not a salmon feeds in fresh water. In my opinion there is positive evidence that he does ; otherwise, why does he take flies, live and artificial bait, worms, and shrimps? Is it to be supposed for a moment that if he takes these he will not take any other food fresh water affords him? It is true he deteriorates in condition from the date of his migration from the sea : but this may be accounted for by the fact that the food the river affords is not of that fattening nature which he gets in the sea, and Nature evidently did not intend he should remain in the same prime condition in fresh water as when he entered it. He has to undergo certain changes before he is in a fit state to spawn, and, if he remained in the same prime condition as when he entered the river, this would be impossible.

It is well known that a newly run salmon will take a fly or bait sooner than one which has been a longer time in fresh water, and I could quote many instances to prove this. A few years ago I was fishing in the north of Norway, where there was a large pool under a fall which was impassable for salmon. The fish congregated in this pool in vast numbers, but I seldom killed one in it that had not sea lice on him. (The presence of

sea lice is a certain sign of a new-run salmon : these parasites die after being twenty-four hours in fresh water.) I also remember, when fishing in the Galway river, in Ireland, in the spring months, where from twenty to thirty salmon were killed daily with rod and line, nine out of ten had sea lice on them. The fish congregated in the stream below the weir in thousands, and, although they had only been a short time in fresh water, they did not seem to care much about feeding.[1]

To account for this satisfactorily is impossible, but it may be reasonable to assume that for the first few hours after a salmon has left salt water, where he has been in the habit of feeding voraciously, his appetite does not leave him : but eventually the absence of the food he has been accustomed to will make him sulky and disinclined to feed. He is in such good condition that he can afford to abstain for a while ; but he will sooner or later be obliged to feed to maintain his strength, in order to enable him to reach his spawning ground. It is not to be supposed he can exist on water, and we know that at times he takes a fly or bait greedily, particularly after a 'fresh,' when he shifts his quarters up stream. He will then take the first fly he sees ; but when once he is lodged it is generally difficult to get a rise out of him.

There is a certain time of year when salmon are less inclined to feed than at any other period—this is generally from about the middle of July to the middle of September. The temperature of the water and of the atmosphere is then higher than at any other time, and this has doubtless a great

[1] The most extraordinary thing is the difference in the habits of salmon in different rivers. In the Spey, for instance, in Scotland, fish rise most freely, and as freely take the fly, almost in the tide-way, which comes up but a short distance. In the Wye, where the tide runs ten miles up, the fish do not take freely till they have run up seventy miles. Does this result from the fact that the Spey fish are never in muddy water? the sea and river being quite clear and the bottom pebbly, whereas the fish come twenty miles up the muddy Severn and then have ten or more miles of muddy Wye besides to run up before they get to clean water. This may make them so sick that they do not recover before reaching the Hay in Breconshire, and only above that, seventy miles from the mouth, do they take freely.—ED.

effect on the appetite of a salmon. I have found this to be the case upon almost every river I have fished. It matters little whether the fish are fresh-run or stale : they are indifferent to taking food, and it is quite exceptional to get a good day's sport during those months. They begin again, however, to take at the latter end of September and up to the time of the close season ; but these are mostly gravid fish, and hardly worth the trouble of fishing for.[1]

After a salmon has spawned he is at his lowest ebb—thin, emaciated, and unsightly to behold. He then gradually makes his way to the sea, but, as it is necessary to recruit his strength before he finally leaves fresh water, Nature seems to have provided him with ample means for so doing at this particular season, as on his downward journey he is accompanied by millions of the fry of his own species, and it is supposed he makes such havoc amongst them that it has been in contemplation to alter the salmon laws, making it legal to take spent salmon after a certain date. I have seen spent salmon in such a condition that it has been difficult to distinguish them from newly run fish.[2]

It is commonly believed, because nothing has ever been

[1] In all rivers August is the worst. 'Soolky Agust' (sulky August), the Irish fishermen call it, the warmth of the water making fish sick and idle—in Canada the latter half of July is as bad—but throughout Scotland, Ireland, and Wales I have found fishing to be worst in August.—Ed.

[2] In 1879 I got to our camp on the Natasquham on the borders of Labrador, a Lower Canada province of Quebec, on June 9. The river was full of thousands of fish bright as silver, and apparently in first-rate condition. They were every one of them mended kelts, i.e. fish of the previous year that had spawned in October or November, and, for some unaccountable reason, had not returned to the sea. Usually at that season there are *no* fish in the water, but just within a week, sooner or later, the new fish come up. That year the old fish did not go down till about June 20, and no new fish came up before July. The mended kelts are useless for food, and scarcely any of them would rise. I went away across the gulf to the Ristigouche between New Brunswick and Lower Canada on June 27, not having seen a fresh-run fish, and only killed half a dozen kelts on the Natasquham. One of my friends who stayed through July often killed twenty-five fish a day. From June 10 to the 20th I could sit on a rock and count from sixty to eighty fish jump in a pool within an hour. No one could account for this unusual delay in the going down of the old and coming up of the new fish.—Ed.

found in the stomach of a salmon, that he does not feed. A friend of mine, who takes the greatest interest in this subject, told me that, when he was fishing in Norway some years ago, he cut open every fish he caught (thirty in number), and did not find anything inside any of the salmon, but three of the grilse were gorged with insects, which he thought were daddy-long-legs. This is the only instance I ever met with of food being found in the stomach of a salmon; it is, of course, an exception: but if any evidence were wanting, this of itself proves that salmon will feed, though how to account for the absence of food in their stomachs is a puzzle. I have often noticed, fishing with natural bait, when a salmon is landed the bait is torn from the hooks and sent up the line a foot or more. Does not this show that a salmon has marvellous power of ejecting its food? Is it not probable that, when he gets into trouble, either by being hooked, or netted, he will disgorge the contents of his stomach? A trout that is full of food will, we all know, do so after he is landed—and why not the salmon? My friend who told me he found food inside the grilse also said that several Norwegian net fishermen informed him that, after their nets were drawn in they generally found a number of half-digested fish amongst the salmon thus caught. He also said he had heard the same story at Newcastle-upon-Tyne. If these fishermen spoke the truth, it goes a long way in support of my theory.[1]

The absence of food in a salmon's stomach has been accounted for in one other way. A salmon may have such powers of digestion that whatever food he consumes disappears almost at once; but against this supposition there is the fact of what my friend found inside three grilse. As it is certain grilse are only salmon in youth, this theory must fall to the ground, and I am inclined to think the former explanation is the correct one.

[1] From my own experience I fully endorse this. Salmon must feed in fresh water, or they would take neither fly nor bait—spoons, prawns, or anything else. Yet I never found anything in their stomachs; they must eject it when in trouble.—ED.

A spring salmon will not travel as fast as a summer salmon. The rate at which salmon travel is dependent upon the state of the weather and the temperature of the water. Should there be a hard winter, lasting, as it often does, well into the spring, hardly a fish will have found his way to the upper waters; but should there have been an open winter, with good travelling water and no obstruction, the upper reaches will be fairly stocked by the time the fishing season commences. Of course there are exceptions, and, however mild the spring may be in some rivers—for instance, the Wye and the Usk in Monmouthshire and Brecknockshire—spring fish will not travel above a certain distance, and the upper waters do not get stocked until well on in the season. In Scotland the temperature of the water in the early spring is always very low, and obstructions in the Scotch rivers stop the fish running, so that they will not pass these until the weather gets warmer and the temperature of the water higher.[1]

On the Helmsdale and Shin, in Scotland, are falls over which salmon can easily pass, but they will never do so until the month of April, and it is known almost to a day when they will make their appearance in the stream above these falls. That salmon are very susceptible to cold is quite certain; although they are fresh out of the sea, and in their primest condition, and will take a fly or bait greedily, yet they will not lodge in a rapid stream in the early part of the spring, but are always found in easy water, just where one would expect to find a spent fish; and it is not until well on in the spring that they will lodge in rapid water.[2]

[1] Is it not probable that the big fish travel slower than the smaller ones, as in all rivers the first school of fish that come in are the biggest and heaviest during the year, and each subsequent school is successively smaller? Also as the weight and volume of water coming down are greater in the spring than the summer, does that not probably make the progress of the fish slower in spring?—ED.

[2] Who can account for the fact that when you cannot find, or certainly see or rise a fish on the Lochy in the early spring, you can take scores on the Garry of beautiful large salmon in prime condition? The shortest journey to the Garry is through the river and loch Lochy, and yet the fishermen will tell you

The climate of Ireland is milder than that of any other part of the United Kingdom. The temperature of the water is consequently much higher than in either England or Scotland, and many newly run salmon will be found in early spring in the upper waters of Irish rivers where obstructions exist. The majority of them, however, seem to object to face an obstruction until about the month of April, when the weather gets warmer.

A lake is a great attraction to a salmon. If there is no obstruction between lake and sea, a spring salmon will, on leaving the salt water, make straight for the lake without halting. This is particularly the case in Irish rivers, where the temperature of the water is generally high for the time of year.

Autumn salmon are different in their habits from spring and summer fish. For some unknown reason they remain in the sea until they are full of spawn, and then, not being able, on that account, to surmount the difficulties which a spring or summer salmon is capable of, are seldom found above a certain distance from the sea. Their journey up is also a very slow one, and I have always noticed this peculiarity in the habits of an autumn salmon.

In many of our rivers the heaviest salmon of the season, in splendid condition and in appearance like spring salmon, run during the winter months. The run commences in the autumn, when now and then one is caught, but the great run takes place in December, and I often think it is a pity we are prohibited by law from fishing for them.[1]

that the fish in the Garry come from the east and not the west coast (which is close by), and come all the way up the river Ness and through loch Ness, double the distance to the Garry, and whilst they are being caught there in numbers, not a fish could be seen or caught on the Ness. In July and autumn when sport is fast and furious in the rivers Lochy and Ness, not a fish is to be seen in the Garry.—ED.

[1] This is peculiarly the case in the Wye. Up near Builth in December, beautiful fish called Blue Cocks appear. The Wye Fishing Board, of which I am Chairman, gave permission a few years ago to the Honourable Major Geoffrey Hill to catch some of these for scientific purposes. As yet he has not succeeded in doing so.—ED.

If the rivers that are frequented by these fish were closed from October 1 to December 15, and angling only allowed after the latter date, there would be far less harm done than by allowing angling during October and November, when almost every fish hooked is gravid.

By December 15 every gravid fish will have left the pools for the spawning beds, and the catches will be occupied only by those heavy, fresh-run winter salmon. No doubt there are objections to allowing angling during the winter months, but it is a pity we should lose the sport these splendid fish would afford. It is true they can be caught when the season opens in the spring, but by that time they get 'foxey' and have lost condition, and are only fit for kippering; as it is, they do an immense amount of mischief among the smolts in their downward journey to the sea, and we should be far better without them.

Having introduced the salmon to the notice of my readers, I will now endeavour to describe the best way to catch him, and, as it is the most important part of a salmon fisherman's gear, I will commence my remarks with

THE ROD.

I have tried all sorts and sizes of rods, by various makers, but the one I am now using, and have used for many years, is to my mind perfection. It is a greenheart in three splices, made by Farlow, and, if a rod is to be judged by its powers of casting, it should be a good one. It is the one with which I won the first prize at the Fishing Tournament at Hendon, in July 1884, for the longest overhead cast, with a cast of forty-five yards one inch. To cast a long line, a rod requires great lifting power, and my rod possesses this quality to a great extent, although, at the same time, it is not heavy enough to tire one in a hard day's fishing. I am at a loss how to describe it, but its virtue lies in an equal distribution of strength, in proportion from the butt to the point.

A heavy butt with no spring to it, and with a weak top, is of little use for casting purposes, beyond a certain distance. The spring should be felt, to a certain extent, to the bottom of the butt when casting, and I consider a rod which does not possess this quality of little or no value. Castle Connell rods are made on this principle, but, in my opinion, they are too top-heavy. If they had a little less weight at the top and more in the butt, I think they would be pleasanter to fish with and would lose nothing in power. They will doubtless cast as long a line as rods of other descriptions, but, owing to their being so thin at the butt and so top-heavy, it often happens that, when throwing a long line in a gale of wind, they are apt to smash just above the reel. I fished with these rods for years, but for this reason I discarded them. They are, however, very powerful rods, and well suited to the Shannon, where the fish run very heavy and a powerful rod is required; and, as all fishing is done out of a boat on that river, long casting is unnecessary.

Every rod requires a line to suit it; and it will be as well to bear in mind when making a choice of one that a rod with a weak, whippy top is not suitable for casting thick lines, and a stiff or more powerful rod is not adapted for casting a thin line. The best wood for a rod is green or brown heart. It is very light and pleasant to fish with: the only drawback is that rods made of it will sometimes smash at a moment's notice without any apparent cause.

I have sent my favourite rod to Farlow's, and, should anyone wish to try one made on the same lines, he will be able to obtain it at that establishment. In choosing a rod, a novice will walk as it were blindfolded into a fishing-tackle maker's shop, and generally order the biggest rod he can get, and of a calibre which will tire him in half an hour. A big rod seems to be a necessity to him, and a gentle hint from an older angler that the rod is rather too heavy is not often taken in good part. It is only by bitter experience that he will find out his mistake. If fishing-tackle manufacturers would but 'take stock' of their customers, and recommend the beginner to choose a rod

which will be found suitable to his strength, it would be no loss to them, and would save a great deal of disappointment. It would, moreover, start the novice in the right road to success; whereas, if he begins fishing with a big rod that is over his strength, he will have probably to toil and labour for weeks before he can make a decent cast, which he might have succeeded in accomplishing in a day or two if he had taken a friend's advice.

A seventeen-foot rod is quite long enough for any ordinary casting for salmon, provided it is of sufficient power. A sixteen-foot rod is long enough for peel or grilse fishing, or even for salmon, when the water is low and where fine tackle and small flies are required. Anyone who has read the reports of the Casting Tournaments at Hendon, will see what marvellous casts were made with sixteen-foot rods: but they must be made of good stuff, with plenty of lifting power. Fishermen of any experience will of course select a rod to suit their own fancy, but I strongly recommend the novice to make his first effort with a rod under his strength, and, above all things, to avoid using one with a weak, whippy top.

The art of rod-making has been brought to great perfection in America; the split-cane rods are marvellous works of art, and are being much used in this country; but they are very expensive, and, as I cannot discover any particular advantage they possess over our old-fashioned English-made rod, I prefer to use the latter.

THE REEL AND LINE.

It is a great mistake to fish with a big, heavy reel, as every ounce of needless weight in reel or rod will tell against the angler in a hard day's fishing, as surely as it does upon a race-horse when running a race. A man who thinks it necessary to fish with a big rod generally uses a big reel to match, with as much line as it will hold, very often needlessly thick. To make a clean cast the line must be used to suit the rod. When fish-

ing with a powerful rod a moderately thick line is required, a thin line, as I have before remarked, being of no use. A reel four inches in diameter, with a drum of 1¾ inch in width, will hold thirty or forty yards of thick line for casting purposes, and 100 to 120 yards of thin back line—in all about 140 yards, which is long enough for any of our rivers. The majority of fishermen use a thick line, of the same thickness from end to end; but, as I think it may be taken for granted that forty yards only, at the outside, are required for casting purposes, nothing is gained by the remainder of the line being of the same thickness.

I will endeavour to show that there is a great disadvantage in using a continuous thick line, and that there is a good deal to be gained by using a line made as I have described. When fishing with a continuous thick line, should a salmon take a long run when hooked in a rapid stream, the pressure of the water upon the line is so great that, unless the casting line is of unusual strength, there is great risk of its getting broken. On the other hand, fishing with a thin back line, the resistance to the water in a like case is so much less, in proportion, that the chance of bringing the fish to bank is far greater and the risk of a break reduced to a minimum. Another advantage in using a thin back line is that the reel of the aforenamed dimensions will hold a far greater length of line. The line I recommend, say thirty or forty yards, is tapered at both ends, and moderately thick in the middle. The advantage of having this line spliced to a back line is that when one end is worn from casting it can be cut off, the worn end respliced to the back line, and the other end brought into use. Anyone who has not fished with these tapering lines will be surprised at the ease with which they can be cast, and their superiority will be found out when fishing on a windy day. Some say it is best to use a light line upon such an occasion, because it cuts through the wind better than a heavy line, but in my opinion a light one is utterly useless for casting purposes upon a windy day, and the heavier the line the easier it is to cast.

Thicker lines are required for spring and autumn fishing,

when large flies and strong tackle are used, but in the summer time, when the peel commence to run and small flies are used, light springy rods and light lines are preferable to the heavy salmon rod, and far more pleasant to fish with. The mouth of a fresh-run peel or grilse is very tender, and the strain likely to be put on the line when the fish is hooked will, if a heavy salmon rod is used, be very apt to tear the hook out. Very little strain is required to fix the barb of the hook, and when fishing for peel the fish should be very lightly handled; easy-running reels should be used when fishing for either salmon or peel, but most particularly so when fishing for the latter.

The tapering lines I have mentioned can be obtained of any length or thickness to suit the angler's fancy, dressed or undressed. I prefer to buy them undressed and dress them myself. An undressed line will last quite as long as a dressed one, and be quite as pleasant to cast, but care should be taken to dry it each day after fishing. I have an undressed line that I have used for two whole seasons, and it is now as sound as the day I bought it. This is more than I can say of most dressed lines sold by fishing-tackle makers, which will seldom stand more than one season's work.

In selecting a dressed line care should be taken to ascertain it is not hollow. A hollow can easily be detected by cutting off the end of the line with a pair of sharp scissors. My objection to a hollow line is this, that should there be a flaw or bruise the water will gradually find its way into the hollow, run down the whole length of the line, and as owing to the outer coating being waterproof the line cannot be dried, it will therefore quickly become rotten. I have seen many lines that have been used only two or three days become quite rotten, which I am convinced has been from no other cause than the one I have mentioned. A hollow line may be easily known, as it is round; a solid plaited line is square.

[See also preliminary chapters on 'Tackle.']

DRESSING LINES.

The following recipe for dressing lines I can safely recommend. Mix equal parts of raw linseed oil and best copal varnish, boiling until the mixture singes a feather (this should be done out of doors, owing to the inflammable nature of the solution). When cold put the line in to soak. A week will be enough for a solid plaited line, but if the line is hollow it should remain in much longer so as to allow time for the solution to fill up the hollow. When thoroughly saturated, a fine day should be taken advantage of, and the line put out to dry in the open air, stretched at its full length, fastened at both ends to two wooden posts, all the superfluous dressing being carefully removed with the hand or a bit of cloth. It should not remain out, in its first stage of drying, in the rain, as a very few drops will spoil it, and the dressing will come off; but when the outer coating is tolerably dry, which will be in about a week in warm weather, wet will not affect it, although it will be advisable not to leave it out in the rain at any time if it can be avoided.

In about a fortnight after it has been out the line should be redipped in the solution, and the operation of stretching and removing the superfluous dressing repeated. This will be found sufficient, and nothing will remain but to allow it to dry.

A line should not be used for at least six months after being dressed. It may be hung up indoors, but it will be advisable whenever the weather is favourable to put it in the open air. The best months for performing the operation of dressing are June, July, August, and September, the temperature being higher during those months than at any other time of the year. Dressed lines can be dried in a very short time by mixing 'dryers' with the solution, but there is the greatest objection to their use. The object of the wholesale manufacturer, owing to the great demand, is to get the operation performed as soon as possible, and therefore dryers are required; but the consequence is, although lines dressed in a solution in which dryers have

been used look like perfection in the fishing-tackle maker's shop, it will often be found after they have been used a very short time they will 'knuckle,' when they may just as well be thrown into the fire. There is no mistaking a 'knuckled' line, and nothing can be more unsightly. Instead of being the beautiful even-looking coil that came out of the fishing-tackle maker's shop, about every two inches or so, where the line has passed through the rings of the rod, the varnish comes off in dust, and a small white ring appears, giving the line the appearance of the knuckles of the finger.

I have seen many of the best American dressed lines 'knuckle' in a very short time and become quite unfit for use. After paying a good price for a line, nothing to my mind can be more annoying or disappointing, and if this were to happen in a far-off country where there were no fishing-tackle makers' shops, for instance in Norway or Canada, the consequences might be very serious. This evil can, however, be avoided by dressing lines in my fashion, and these I will guarantee to last for years if taken care of and dried every day after fishing. I would not trust the-best looking dressed line that ever came out of a fishing-tackle maker's shop ; but the wholesale manufacturers are to blame for this, and not the fishing-tackle makers, who as a rule do the best they can to supply the best article for their customers. I would recommend anyone who has time to spare to dress his own lines, but without dryers ; or, if he has not any time to spare, to use them undressed. An undressed line will get saturated with water after the first cast, and this supplying the place of the dressing, the line will be found quite heavy enough to make the longest cast required. The only objection, and it is but a very trivial one, to the use of undressed lines, is that should it be desired to add to the length of a cast by pulling out a yard or so of line before the cast is made, when this is let go it is very apt in its wet state to get twisted around the butt of the rod, which will defeat the object.

CASTING LINES.

The selection of a suitable casting line (i.e. the gut line that connects the reel line with the fly) requires great judgment and care on the part of the angler. If the water should be high or stained after a fresh, the strongest lines may be used, and finer ones in proportion as the water gets lower and clearer.

During the early spring months salmon are keener to rise at the fly than at any other time of the year, they will take larger flies than later in the season, and do not seem to care what the casting line is made of; but during the later spring and summer months, when the water is very low and clear, they are more particular, and very fine casting lines and flies, not much bigger than trout flies, must be used. To land a big salmon in low water with a light rod and fine tackle, is a feat any salmon fisher may be proud of.

Treble-twisted or plaited gut casting lines are generally considered the strongest, but these are not to be trusted. Some of them will doubtless last a long time, but many are made up of inferior cast-off gut which is difficult to detect in the piece, and would not stand a week's work. It is also difficult to twist gut so evenly that when a fish is being played, an equal strain shall be made to bear on each strand.[1]

Lines made of two strands of carefully selected round salmon gut of equal thickness, untwisted, are much stronger than most of the treble gut casting lines that are generally used, but great care must be taken in making these lines, as when the links are knotted together it will be found that, nine times out of ten, one of the strands will be longer than the other, consequently the shorter strand would have to bear the whole strain when a fish is being played, and the other strand would be useless. This can be avoided if the following directions are attended to: after the strands that are to compose the line

[1] I call a piece of gut taken singly 'a strand,' and when made up in a casting line 'a link.'

have been selected, and have been allowed to soak in cold water for some hours, take the two that are to form the first link, and having made the loop that is to connect this with the reel line, whip the strands tightly together (this need not be done closely) with well-waxed silk, from the knot where the loop has been made down to nearly the ends of the strands. Knot to the next link and remove the whipping, when it will be found that the strands will lie evenly together and any strain that is put on will be equally shared by both. Commence whipping from the last knot made in the manner above mentioned, and continue until the casting line is complete. I myself never use anything but single gut, unless fishing in big rivers, but I make up my own lines and take great care to use only the strongest gut.

Not long ago I discovered what I thought was a new method of fastening strands of gut together without knots, but I have since found that the invention was not a new one, and that my plan had been adopted years ago by Mr. Cholmondeley-Pennell, and described in his book 'The Modern Practical Angler.' His principle and mine are identical, although somewhat differently carried out. *The result, however, is that in both cases the fastening together of the gut in a casting line is the strongest part of it.*[1]

On testing a line so constructed with strands of ordinary salmon gut, dry, it broke at a strain of 15 lbs. in the middle of one of the links and not at the fastening.

Another line of apparently the same strength, the links of which were fastened together by knots in the ordinary way, broke at a knot at a strain of 7½ lbs. A third, again, made of two strands of the strongest picked gut, untwisted, without knots, pulled the index of my steelyard down to 20 lbs. without breaking. I am certain it would have stood a strain of several pounds more, but I was content with such a result, and I feel satisfied that such a line would hold the biggest salmon that

[1] See description of the knot, p. 45 (chapter on 'Tackle').

was ever caught by rod and line, and a break would be almost impossible.

There is nothing more disappointing or trying to the temper than to get a line broken owing to using bad tackle. The man from whom the gut is bought is pronounced to be a swindler, and never to be patronised again, but in the majority of cases carelessness on the part of the angler lies at the root of the evil, and it is not fair to lay the blame on the man who sells the gut, which varies in quality so much that it is quite a chance to get a good hank of it. Good 'made-up' single-gut casting lines can be bought at any of the leading fishing-tackle makers' establishments, but the greatest care should be taken in the choice of one. If there is but one link in the cast of uneven thickness it will be better to put it aside. A cast may be to all appearance perfect, but if the thin end of one of the links is knotted to another which is thicker, there the weak part of the cast will be, and it will be very apt to break at that point. The same care must be taken in making up one's own casting line. Each link should be of even thickness throughout the whole length of the line, and round without a flaw or a scratch. A flat strand, or one which is coarse-looking, should never be used.

If every reasonable care is taken in the selection of a casting line and a fish breaks it, as will occasionally happen to the best of us, the angler has the satisfaction of knowing he has done his utmost to avoid such a catastrophe, and will feel the disappointment far less than if he were conscious a fish was lost through his own carelessness. When a casting line gets worn and ragged, which will probably be the case after two or three months' use, it will be advisable not to trust it. Some of the links may be sound, and may be used in making up another cast, but I would rather not trust them, as it is like mending an old garment with new cloth.

All casting lines should be tested every morning before going out fishing, and also looked over several times during the day. Knots which are often made in casting in foul wind should be taken out whenever they appear, for, if allowed to remain,

there is great risk of a break even with the strongest line. If they cannot be taken out, the link in which they occur should be cut out of the cast and replaced by a new one. The most severe test a casting line can be subjected to is to take an end in each hand and give it a sudden jerk. A line must be very strong to stand this, and unless it is intended to go in for big salmon, when the strongest line is required, such a severe test is unnecessary. In testing a line it is generally thought that if it will stand a strong pull it is sound. This is not to be trusted, and it should be subjected to an additional test as follows :

Hold the line by the forefinger and thumb of each hand about an inch on either side of each knot in succession ; imagine for a moment that the line is a bit of stick or slate pencil, and proceed as if you were trying to break it. If the gut is worn at any of the knots it will knuckle at that point, and it should be cut off and a new knot made ; although it might stand a strong pull, a sudden jerk would generally break it. If the line does not knuckle at any of the knots it may be assumed that it is sound.

Some fishermen prefer a tapered line, which they say will make a neater cast than one of a continuous thickness. This may be very well when fishing in low clear water in summer time, when fine tackle and fine casting are required, but in spring or autumn, or when fishing in a big water, where it is necessary to use the strongest tackle, I should prefer, at the risk of making an occasional clumsy cast, to use a casting line of the same strength and thickness throughout. A tapered line is weakest at the end where the fly is attached to it, and as a line should be as strong, if not stronger, at this point than any other, owing to the connecting knot getting the hardest work, I think a tapered casting line is objectionable, and I will engage to cast quite as neat a line with one of a continuous thickness.

It is not generally known that gut will quickly rot when exposed to a bright hot sun. But this is so. Casting lines, there-

fore, should not be wound round the hat, but put away when not in use; hanks of gut are best preserved in wash-leather.

It is a common belief that by staining gut it is less easily seen by the fish, but I think this is very doubtful, and I prefer to use it in its natural state.

I have entered into minute details upon this subject, as I think it of great importance. Rod, line, flies, &c., may be perfection in every other respect; but should there be one weak point in the casting line, the angler may just as well be fishing with rotten thread, and it is absolutely necessary to insure success that he should take such precautions as I have advised.

FLIES.

There is more difference of opinion about salmon flies than upon any other subject connected with salmon fishing. Some people assert that it is necessary to use different patterns of flies for every month during the fishing season; others, that certain patterns are suitable only for certain rivers, and that it is useless to fish with any others. Another theory is that certain shades of colour must be used on certain days. Every fisherman one meets has his own ideas upon this subject. I have mine, and whether they are right or wrong I will endeavour to explain them. I think it is reasonable to assume that a salmon can discern the colours of a fly; but will the theorists, who believe that it is necessary to fish with certain patterns of flies in each month of the fishing season, tell me that a feeding fish will refuse a fly which is offered him, say during the month of April, because it is not said to be the pattern of that particular month? There is not a particle of evidence in support of such a theory, and it is not worth one moment's argument. That certain patterns of flies must be used on different rivers is a more plausible theory, and if the word 'colour' had been substituted for 'pattern' I should be quite of the same opinion. Some rivers are very clear; others more or less stained with bog water, and from other

causes ; and for this reason flies which are suitable for clear water will not suit peaty or stained water, and local anglers, having found out flies that will kill on their rivers, establish standard patterns, and will use nothing else.

Experience has, however, taught me that if due regard is paid to colour, any other pattern will kill just as well. Local professionals are a very prejudiced class of people as regards salmon fishing, and, if they can help it, will never allow a stranger they are attending to fish with any other than local patterns of flies. If he persists in doing so, and does not know the river, he will as likely as not be put to fish where he will get no sport, and it generally ends by his leaving the flies he has brought with him behind at his fishing quarters and filling up his book with local patterns. If he has sport with these flies, which is very likely to be the case, whatever opinions he may have had before he came, when he goes away he will probably have become impressed with the belief that no other flies were suitable to the river he has fished, and no amount of argument will convince him to the contrary. No doubt that is the reason why so many anglers become converts to this theory.

It may be presumptuous on my part to say I differ from them ; but I have had so many proofs they are mistaken in coming to such a conclusion that I do not hesitate to say so. I have fished a great number of rivers all over the United Kingdom and elsewhere, and I have generally, when not fishing my own water, used local patterns, as it is as well not to fall out with one's attendant, who has it so much in his power to make or mar sport. These flies have generally proved to be killers ; but whenever I have had an attendant who did not understand much about flies, I have always used my own favourite patterns, and have found them just as killing as the local ones.

When I fished the river Wye some years ago, the favourite local fly was made up of a dirty yellow rough body, blue cock's hackle, and the wing of a feather from a bittern's neck. Now all the modern patterns are used, the favourite fly in the spring being the 'canary.' What a contrast !

A friend of mine (a Lee, co. Cork, fisherman) told me not long ago that the fish were beginning to take the Jock Scott in that river ; but the greatest revolution as regards local patterns has been on the river Usk, in Monmouthshire. Formerly the favourite fly used there was made of a dirty yellow body, blue or red cock's hackle, and brown wing. Now, that fly is quite out of date, and the favourite fly—I suppose it may be called a fly—is the 'Usk grub.' Its body is made of tinsel chenille, cock-y-bonddu hackle in joints, and it is certainly a killing fly. Other flies of modern patterns are used, but this is the favourite. This fly was first introduced in the Usk by Mr. G. M. Kelson.

A gentleman considered to be the best fisherman on the Usk, who has fished that river all his life, uses nothing but bodies of flies without wings, made of various colours of seal's fur and mohair, with hackles to match. He never puts on wings, as he says there is no necessity for them, and yet he catches as many fish as anyone else, and often scores when others draw a blank. Two years ago I went with my friend Colonel R—— to fish the Shannon at Killaloe, in the month of April. The river was high at the time, and the gaudy Shannon flies were being used. We had just come from the Blackwater, and had no flies excepting those we had been fishing with on that river. Our boatman had no Shannon flies to spare us, so we were obliged to fish with the Blackwater flies, but were told no Shannon salmon would look at them. The result was—whether it was luck or not—the Blackwater flies beat the Shannon flies, much to the astonishment of our boatman, who accounted for it by saying that the fish were tired of seeing gaudy Shannon flies and wanted a change. Almost every salmon we caught, however, had sea lice upon him, and the fish which were said to be tired of seeing the Shannon flies were in all probability in the sea at the time. I often ask myself the question whether it is the salmon or the angler that has changed his fancy. I am inclined to think it is the latter.

I think I have adduced sufficient evidence to prove that the salmon is not so very particular as to the pattern of fly, and

it is my belief he will take a fly of any pattern when he is in the humour, provided it is of a proper size. Size has more to do with success than all the patterns of flies ever invented. Even if a fly is of the right colour too 'big' a salmon will not take it. He may rise at it, and probably get 'rugged' and will then be seen no more. The choice of a fly of suitable size is a very important matter, but I will allude to this hereafter.

I now come to the question of certain shades and colours being more suitable than others upon certain days. I have no doubt a salmon will occasionally prefer a fly of a certain colour to any other, although I do not admit he would refuse to take a fly of another colour, when he is in the humour, if it were offered to him. I remember upon one occasion watching a cross-line at work upon the Blackwater, when I noticed one fly take fish after fish, all the others, eleven in number, failing to rise one. I cannot think this was accidental; probably the appearance of the fly, under a peculiar condition of light, was the attraction. Whether the fish would have taken any of the other flies if that particular pattern had not been upon the cross-line I cannot say, but I am inclined to think, from what I know of their habits, they would have done so.

If it is taken for granted that a salmon prefers a fly of one colour to another upon certain days, the difficulty is to find out the right colour, and I think a great deal of time would be wasted in the endeavour to do so. All we can do is to select the fly we fancy will take, and if it is of the right size, and if any fish are on the move, we are not often disappointed. There are certain facts, however, which, to a certain extent, may guide us in the choice of a fly. I have tried the experiment of holding up flies of different colours against the sky, putting myself in the position a salmon would occupy with regard to each fly as it was held up. The result was that, with a bright blue sky as a background, I could see every colour fairly well, with the exception of light blue and a jay hackle, which I could not distinguish. With an overcast sky as a background, and a clear atmosphere, I could

see all the colours much plainer, and more distinctly in proportion as the background was darker. If I held up the fly in a room, I could distinguish the colour of almost every fibre in the fly, but when it was dark a white fly was seen plainer than any other colour.

There were certain conditions of sky and atmosphere, however, when I was puzzled to distinguish the colours. If the sky was not wholly overcast, and there was a great glare caused by the sun shining through the broken clouds during the summer months, and on a dull heavy day, with a dark murky atmosphere, I could not tell one colour from another, but I could tell whether it was dark or light. In all states of the background I could distinguish black and red better than any other colour, and if it is taken for granted that a salmon can see a fly as we do, when it is held up to the light in the manner I have explained, it may assist us in the choice of a fly as regards colour.

In clear water, on a bright day, a fly composed of red or black, being decided colours and easiest seen, might scare a salmon when coming near it, or just about to take it; therefore it may be advisable to use a fly of a neutral or any light colour on a bright day. Upon a dark day, particularly if there is a wind, or should the water be stained after a fresh, as black and red are more distinctly seen, the more likely are they to attract a salmon's attention than a neutral colour, and in such a case I should say that a fly with a black or dark body would be most suitable. It must, however, at best be only guess-work. Large, gaudy flies, such as are used on the Shannon, are not suitable for ordinary-sized rivers, and are only good for fishing in deep rapids of big rivers, where they are more likely to attract the attention of fish than flies of more sombre or neutral colour.

In a deep and rapid stream a black or red fly, of a proper size, will be more likely to attract a salmon's attention than any other colour. Whether he would take a fly body, hackle, and wings all black, I am not prepared to say, but I have taken

numbers of salmon with a red fly, and find this colour do well in a big water, particularly if stained after a fresh. Although big, gaudy flies are only suitable for big rivers, I see no reason why they should not kill as well as any other pattern upon smaller rivers, provided they are made of a suitable size. I have said success greatly depends upon the size of the fly used, and to judge the proper size is a most important part in the art of salmon fishing.

On arriving at a river's bank the angler should carefully examine the pool he is about to fish, so as to ascertain the colour and depth of the stream, and whether it is rapid or smooth running. If it is deep and rapid, or stained after a fresh, a large-sized fly should be used, and a smaller one in proportion as the stream is clear or shallow. The state of the sky must also be taken into consideration. In spring and autumn salmon will take much bigger flies than in the summer time. A fly that would be called big in summer will appear almost a midge in comparison to the smallest flies generally used in early spring or autumn. If the water, however, should be very low, even in spring, it will be necessary to use a very small fly, according to the size of the water. It is impossible to lay down any hard-and-fast rule for selecting a suitable fly. The art of doing so is only acquired by long experience, and the best of us are often at our wits' end to know what fly to select.

When a man is seen constantly changing his fly it is certain that sport is bad, and fish not on the move. It is possible, but very improbable, that a change of fly will change the humour of the fish. I have myself changed flies hundreds of times, but have never known it to answer when fish are sulky; a change, however, after a fish has risen is very often successful. It is a common saying that fish get tired of the sight of flies, and become shy by being much fished over; but if my experience can be taken as evidence, I rather incline to the opinion that it is the fisherman who gets tired of throwing his fly over the fish, rather than the fish that get tired of seeing it.

I was fishing in the Lyngdal, in the south of Norway, with

NOT ON THE MOVE

my friend T. F.—the water was very low, and we could see from rocks overhanging every salmon in the pools. At the bottom of a pool celebrated for fish taking the fly, we saw four salmon lying close together. The pool was, I should say, ten feet deep. I scrambled down the rocks to where I could cast my fly over them. My friend stood above watching my proceedings. After about six or seven casts over the fish, he said, 'When your fly was in a particular position, one of the salmon seemed to get uneasy and shifted his position a trifle.' This happened two or three times, until at last the fish could not stand it any longer, and took my fly, but I had the bad luck to lose him after a hard fight.

Upon another occasion, when a little farther down the river, I was standing upon a rock watching my friend fish, where I could see everything which was going on. The water was high but very clear, and nearly a dozen times running I saw a fish rising to the fly whenever it came to a particular part of the stream, but he did not attempt to take it, and did not approach nearer to it than at least a foot. The sun was shining on the pool at the time, and thinking it was of no use trying any more until sunset, we waited until the sun had disappeared behind the hills. Afterwards, the very first cast my friend made he hooked the fish and landed him.

These are the only two occasions on which I have had the chance of knowing what has taken place below the surface of the water while a pool was being fished over, but after what I saw I cannot quite believe a fish gets scared by seeing too many flies. I have no doubt many a fish which we know nothing about comes 'shy' at a fly in the manner I have stated. We leave the pool we have perhaps fished the whole day blank in disgust, yet it often happens another fisherman takes possession of it, and hooks a fish before we are out of sight. What can be more aggravating than this? Yet there are few of us who have not had our tempers thus tried.[1]

[1] In 1879 in July, about 6 A.M., I was first on the water on the Ristigouche, fishing down, at Metapedia, in a canoe. I had on 'Jock o' Scott.' I did not

Fly tying is a very important part of the art of salmon fishing, and doubtless to be able to tie one's own flies enhances the pleasure of the sport. I have heard it said that a man cannot rank as a first-class fisherman unless he can do so; but I think this is hardly fair. Many people's fingers are 'all thumbs,' and they could not tie a fly in a year of Sundays, as the saying goes; other salmon fishers are professional men, and have no time to spare from their duties. These may be first-rate fishermen, although not able to tie a fly, and would loudly protest against being placed in a secondary position on this account. It might just as well be said that to rank in the first class a fisherman should be able to make his own rods and reels, yet there is not one in a thousand that can do so. Fly tying is a most interesting, and I might almost say exciting occupation, and many a dull rainy day, during the winter months especially, may be thus pleasantly, and as far as salmon-fishing matters are concerned profitably, passed. Doubtless a man will feel much prouder when he has landed a fish with a fly of his own making, than with one he had bought, and I would recommend every fisherman who has the time to spare to try his hand at it.

In selecting bought flies care should be taken to ascertain that they are firmly tied. A fly that is to all appearance perfect, may when used a short time come to pieces, and it will probably be found that this is in consequence of no varnish having been applied when finishing off at the head. It is necessary this should be used to make the wings sit firmly and keep their position. This can always be tested in the following

get a rise. I had just reached the railway bridge when an American gentleman asked what fly I was using. I told him. 'I have the same,' he replied, and fished down the pool behind me. He, about the sixth or seventh cast, hooked a 23-lb. fish, which he killed some way down below me, I pulling out of the way to let him pass. Immediately behind him another American gentleman came. Within half a dozen casts he hooked a fish. As he passed I asked what fly? 'Jock o' Scott,' he replied. Away he went in his canoe and killed a twenty-three pounder also. I did not get a rise in the pool, and had fished over the two fish they killed. They were both novices, and had not either of them killed six fish in their lives!—ED.

manner. Hold the bend of the hook between the forefinger and thumb of the left hand, and the head, where the wing is attached, in those of the right hand. If the wing is firmly put on it cannot be moved, but if the fly is badly tied the wing can be shifted with ease right and left at an angle to its proper position, in which case it should be discarded. Bought flies are generally made with too much feather in the wing; this is a great mistake, especially in the case of a mixed wing. If the wing is too heavy the fly cannot work properly; every fibre of a mixed wing should be separate in the water, and, if the angler does his work properly, made to assume a natural and life-like appearance. The loop also of a fly should be carefully examined. It should be made of stout single or treble gut, and on no account of thin gut. I prefer making loops of two pieces of single gut to treble gut, as I think the latter is more apt to fray the casting line where it is fastened to it. Loops should always be tested by giving them a strong pull.

It should be borne in mind by the maker of a fly, be he professional or amateur, that not the least important part of his work is to securely fasten the loop to the shank of the hook. If this is neglected all the precaution the angler may have taken will have been in vain. Before a fly is used the temper of the hook should be tested by holding the shank between the fore-finger and thumb, and having inserted the point in a piece of soft wood, giving it a moderately hard pull. A hook that will stand this test may be trusted.

HOOKS.

There are many different shapes of hooks, each of which has its advocates, but I have not yet come to any conclusion as to which is best to use.

Opinions are often formed according as the fish take badly or well. Supposing a man to have fished for a week with a Limerick bend, when salmon were rising badly, and he lost a

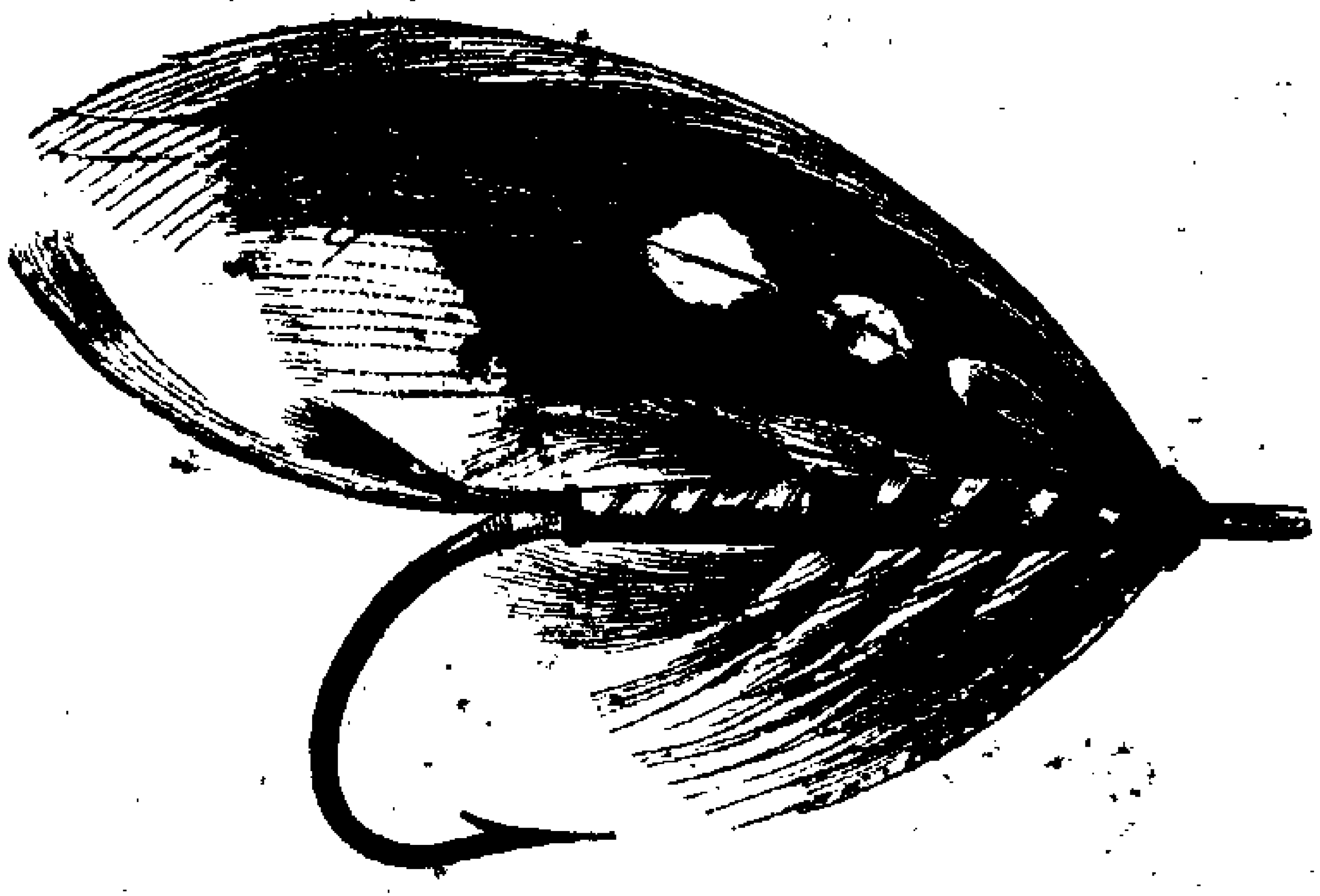
large proportion of the fish he hooked, he would condemn the Limerick hook and try another description of bend, say a sproat; with this he might fish all the succeeding week when salmon were taking well, and lose hardly a fish. He would then adopt the sproat and say there was no hook like it, and he would fish with it until he again came across fish that were rising badly, when the sproat, in its turn would be condemned and perhaps the Limerick again adopted. He would thus go on changing from year to year, never being able to give a decisive opinion as to which is best to use; and that is precisely my case. If, however, I have a preference for one shape over another, I would take the Limerick, as I think a fly looks better when dressed in this shape than in any other.

With regard to patterns of flies, my favourite is the Jock Scott, and if I were told that I was only allowed to fish with one pattern that is the one I should choose; but in any case, with half a dozen flies in addition of different sizes and colours, I should be quite content to go on a fishing expedition and would engage to hold my own. Many salmon fishers, however, prefer a larger selection, and the following list of some of the most popular standard patterns may perhaps assist them in making their choice.

The selection has been made to embrace flies which are all more or less *general*—suitable, that is, to the generality of rivers—rather than those having a comparatively restricted range, however popular and successful they may be in particular localities.

The 'descriptions' of and remarks about all but a few of the last flies are by Mr. George M. Kelson, who has made the question of salmon flies and their dressing a special study.

[Messrs. Foster, Ashbourne, have patented a tinsel of platinum —'silver' of course—which it is claimed will neither tarnish nor corrode. The 'Sunbeam,' they call it. The experiments I have tried seem, thus far, to bear out their statements.—H. C.-P.]



THE 'JOCK SCOTT.

Tag: Silver twist and light yellow silk.

Tail: A topping and Indian crow. *Butt:* Black herl.

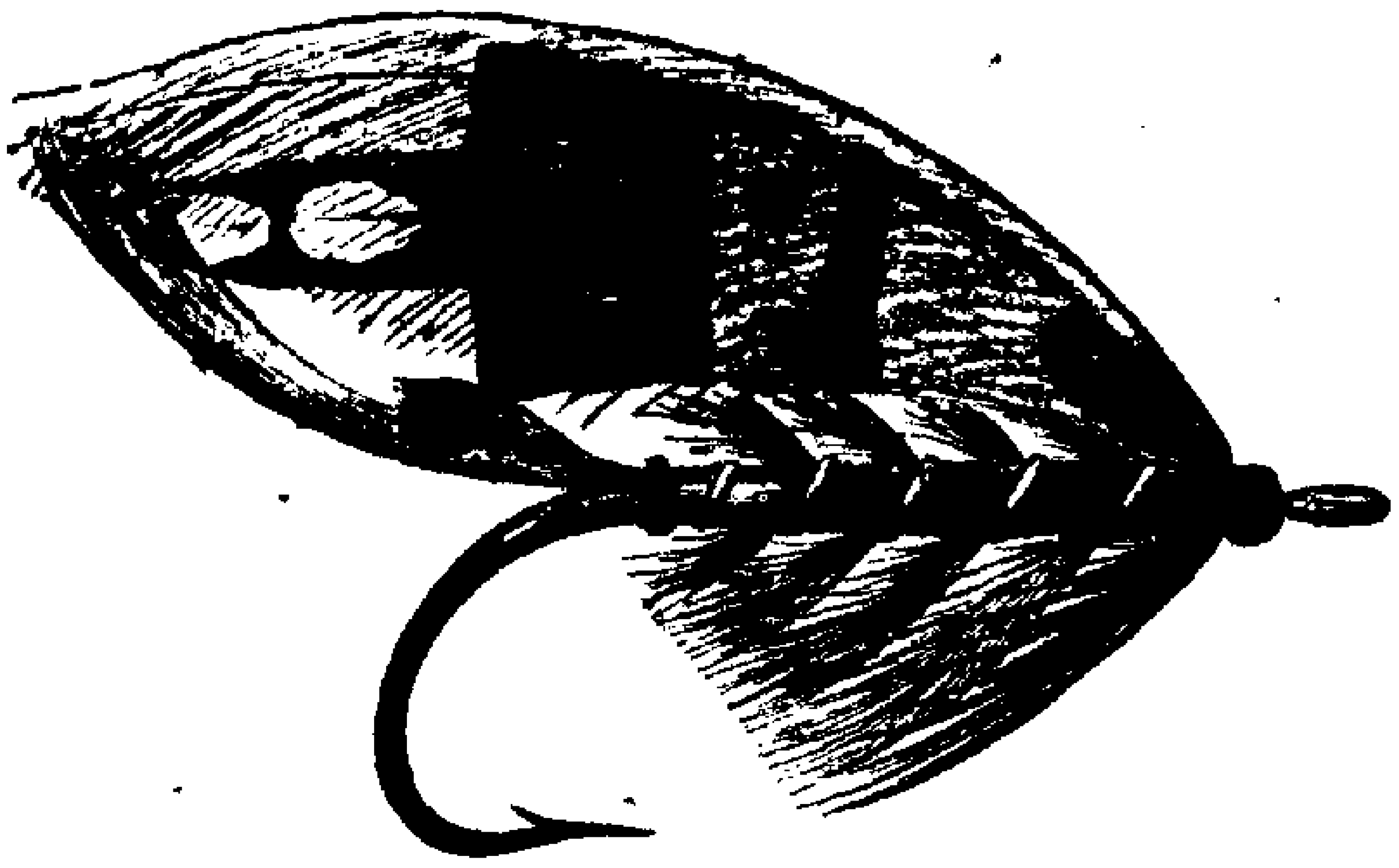
Body: In two equal sections, the first light yellow silk ribbed with fine silver tinsel; above and below are placed three or more toucan's according to size of hook, extending slightly beyond the butt and followed with three or more turns of black herl. The second half black silk with a natural black hackle down it and ribbed with silver lace and silver tinsel. *Throat:* Gallina.

Wings: Two strips of black turkey with white tips, below; two strips of bustard, and grey mallard, with strands of golden pheasant tail, peacock (sword feather), red macaw, and blue and yellow dyed swan over; having two strips of mallard and a topping above.

Sides: Jungle fowl. *Cheeks:* Chatterer. *Horns:* Blue macaw. *Head:* Black herl.

No one will dispute that Jock Scott, when dressed correctly, is the most remarkable of all our standard patterns, and therefore entitled to the precedence it has been here accorded. It is probably the best known fly that 'swims' throughout the length and breadth of the three kingdoms, and indeed it would hardly be an exaggeration of language to say that this splendid specimen of artificial entomology has won an almost superstitious veneration amongst salmon anglers.

Whether used in rushing streams or rapids, or in still, sluggish, oily pools, its appearance seems to be equally attractive and its success assured. It was invented by the late Lord John Scott's water bailiff some forty-two years ago.



THE 'DURHAM RANGER.'

Tag: Silver twist and light yellow silk.
Tail: A topping and Indian crow.
Butt: Black herl.
Body: Two turns of orange silk, two turns dark orange seal's fur; the rest, which is about half, black seal's fur.
Ribbed: Silver lace and silver tinsel.
Hackle: From orange seal's fur, a white coch-y-bonddu dyed orange.
Throat: Light blue hackle.
Wings: Four golden pheasant tippets overlapping, as illustrated, and enveloping two projecting jungle fowl back to back; and a topping.
Cheeks: Chatterer.
Horns: Blue macaw.
Head: Black Berlin wool.

The Durham Ranger owes its origin to James Wright, the famous fly dresser of Sprowston, near Kelso; and its name to the circumstance of its being first successfully tried, some twenty years ago, on the Sprowston water by a party of gentlemen from Durham, to whom it was let at the time.

This was the christening of the Durham Ranger, one of the very best of bright flies, and one that in open pools and bright weather, no matter what the river, rarely fails if not mounted too large. Indeed, as a rule in regard to flies generally, I have often noticed that failure, particularly with gaudy patterns, is due to the fly being disproportionately large or small.

THE 'CHILDERS.'

Tag: Silver twist and light blue silk.

Tail: A topping with strands of red macaw, powdered blue macaw, and pintail.

Butt: Black herl.

Body: Two turns of light yellow silk continuing with light yellow seal's fur, leaving one-fifth at the shoulder for scarlet seal's-fur.

Ribbed: Silver lace and silver tinsel.

Hackle: A white furnace hackle dyed light yellow.

Throat: A scarlet hackle and light widgeon.

Wings: Golden pheasant tippet and tail, turkey, silver pheasant, pintail, summer duck, bustard, powdered blue macaw, parrot, red macaw, and gallina, with two strips of mallard above and a topping.

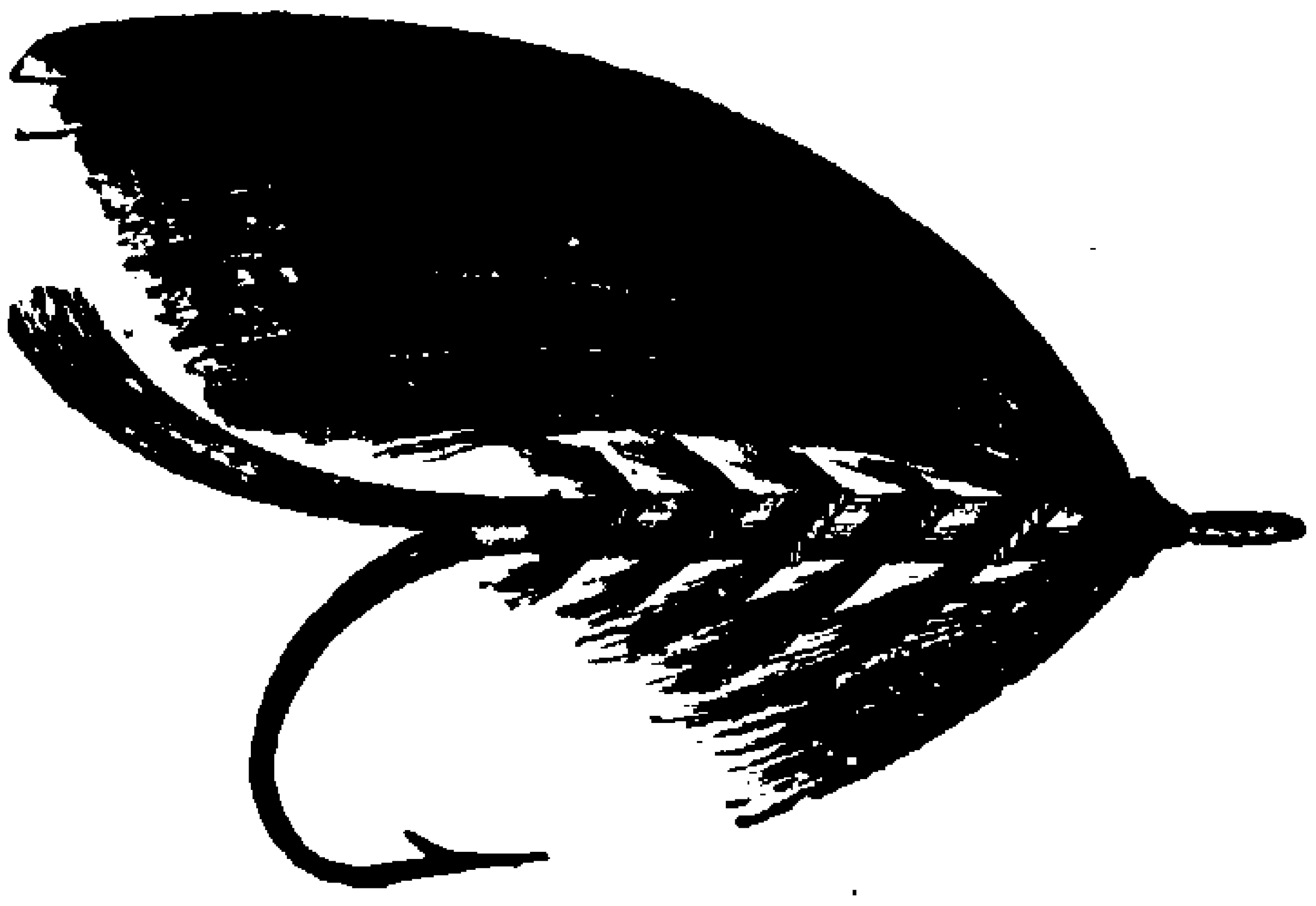
Horns: Blue macaw.

Cheeks: Chatterer.

Head: Black herl.

This fly is an old favourite, having been introduced about the year 1850. Dressed large or small it kills well in any part of the three kingdoms. Originally Colonel Childers, who was the inventor, 'formulated' this fly without a topping, but there is some justification for the addition of one, as, to use his own words, he 'always put one when he could get it.' The black 'list' down the centre of the hackle has a very telling effect in the water.

It is as well to note that 'turkey,' unless when otherwise indicated, means the brown mottled feather.



THE 'BUTCHER.'

Tag: Silver twist and dark yellow silk.

Tail: A topping, teal, and powdered blue macaw. *Butt:* Black herl.

Body: In four equal divisions—beginning with light red-claret, and continuing with light blue, dark red-claret, and dark blue seal's furs.

Ribbed: Silver tinsel (preceded on large hooks by silver lace).

Hackle: Natural black, from light red-claret seal's fur.

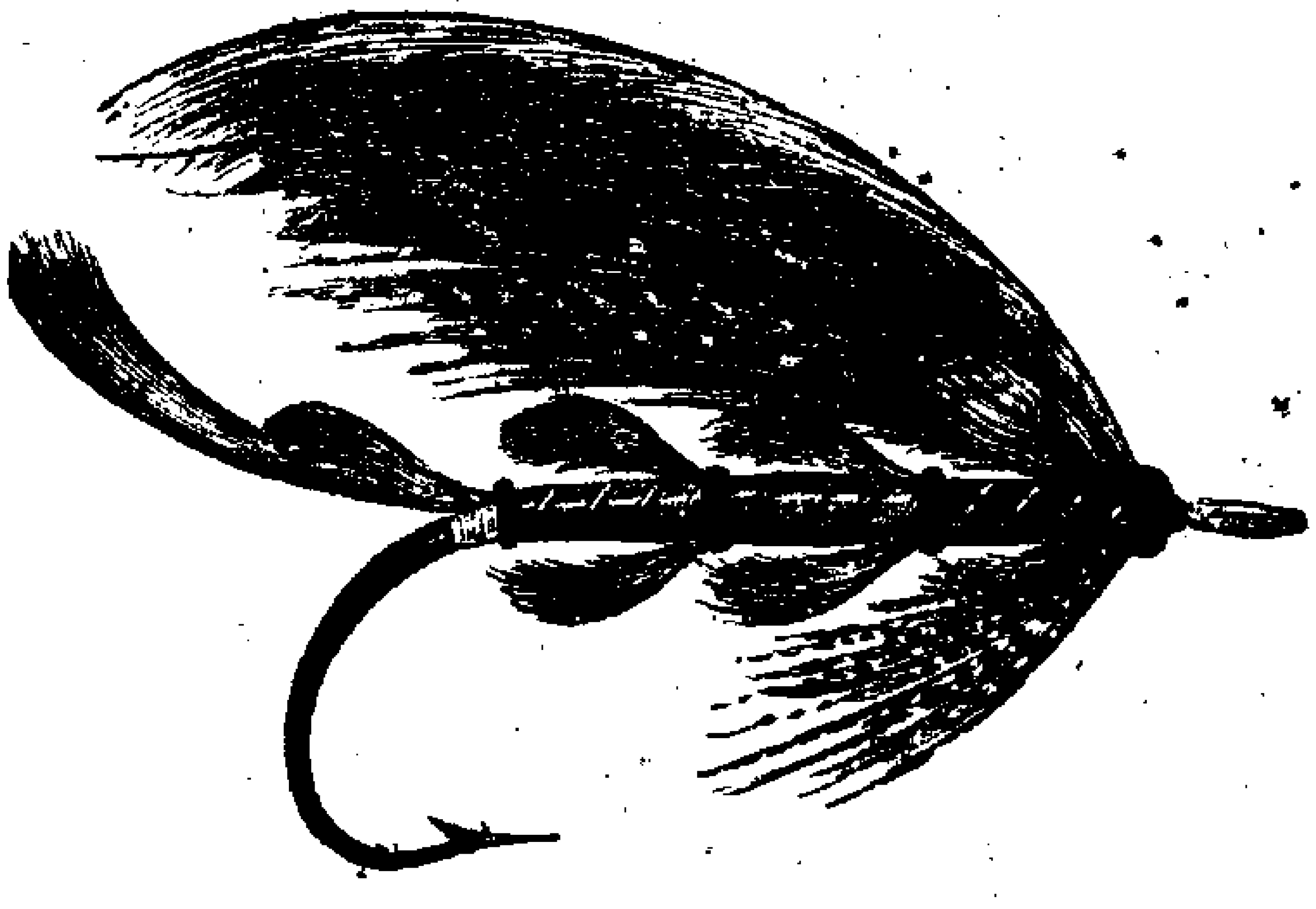
Throat: Yellow hackle and gallina.

Wings: One tippet feather, and a breast feather from the golden pheasant, back to back, tied edgeways as illustrated, the points of the breast feather extending to the length of the wing. Both well covered on the side with slight strips of teal, golden pheasant tail, gallina, bustard, and peacock wing; with strands of parrot and swan dyed yellow, and with two strips of mallard at top.

Horns: Blue macaw. *Cheeks:* Chatterer. *Head:* Black herl.

Measured by the standard of antiquity the Butcher is entitled to the first place in our list of standard flies. Its claim to seniority would probably be admitted by a jury of fly fishers *nemine contradicente.* I can trace it back to the first fountain head. In its infancy it went by the name of Moon's Fly, and was the invention of Mr. Jewhurst, of Tunbridge, Kent. About the year 1838 it was re-christened at Blacker's establishment, from which date it became a popular favourite, and no standard pattern has undergone less change of *toilette* whilst still retaining its high reputation everywhere.

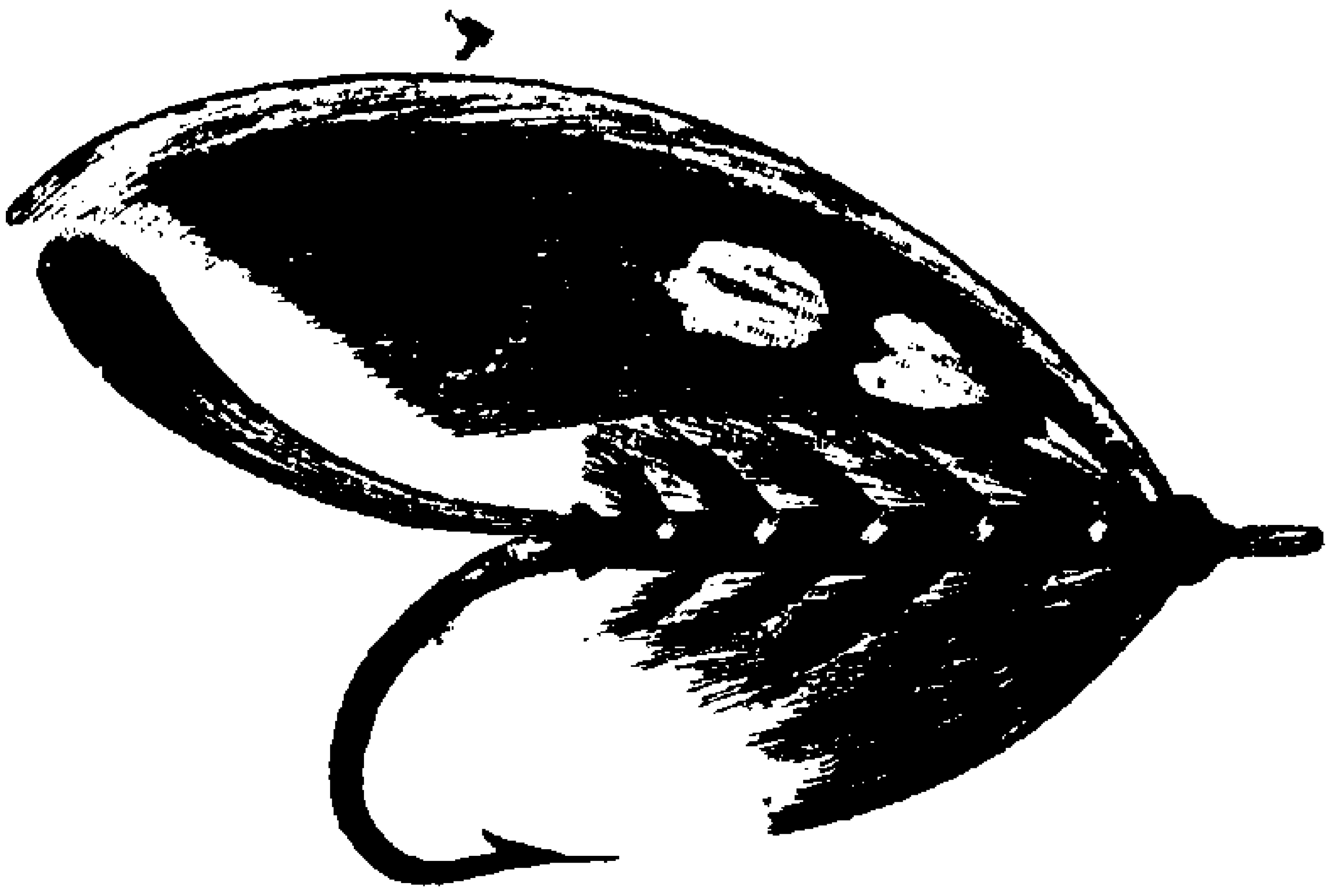
It is very much more effective when the outer wing-coverings are arranged to 'veil' the tippet and breast feather, so as not to form a confused mass at the top, as is the case with carelessly dressed specimens.



THE 'POPHAM.'

Tag: Gold twist.
Tail: A topping and Indian crow.
Butt: Black herl.
Body: In three equal sections butted with black herl. The first dark red orange silk, ribbed with fine gold tinsel having Indian crow above and below, as illustrated; the second, or middle joint, yellow silk with similar ribbing and crow's feathers as before; the third light blue silk and silver ribbing, with the Indian crow repeated.
Hackle: At the throat only, jay.
Wings: Tippet, teal, gallina, golden pheasant tail, parrot, light brown mottled turkey, bustard, red macaw, yellow macaw (swan dyed yellow instead of yellow macaw for large sizes), with two strips of mallard above, and a topping.
Cheeks: Chatterer.
Horns: Blue macaw.
Head: Black herl.

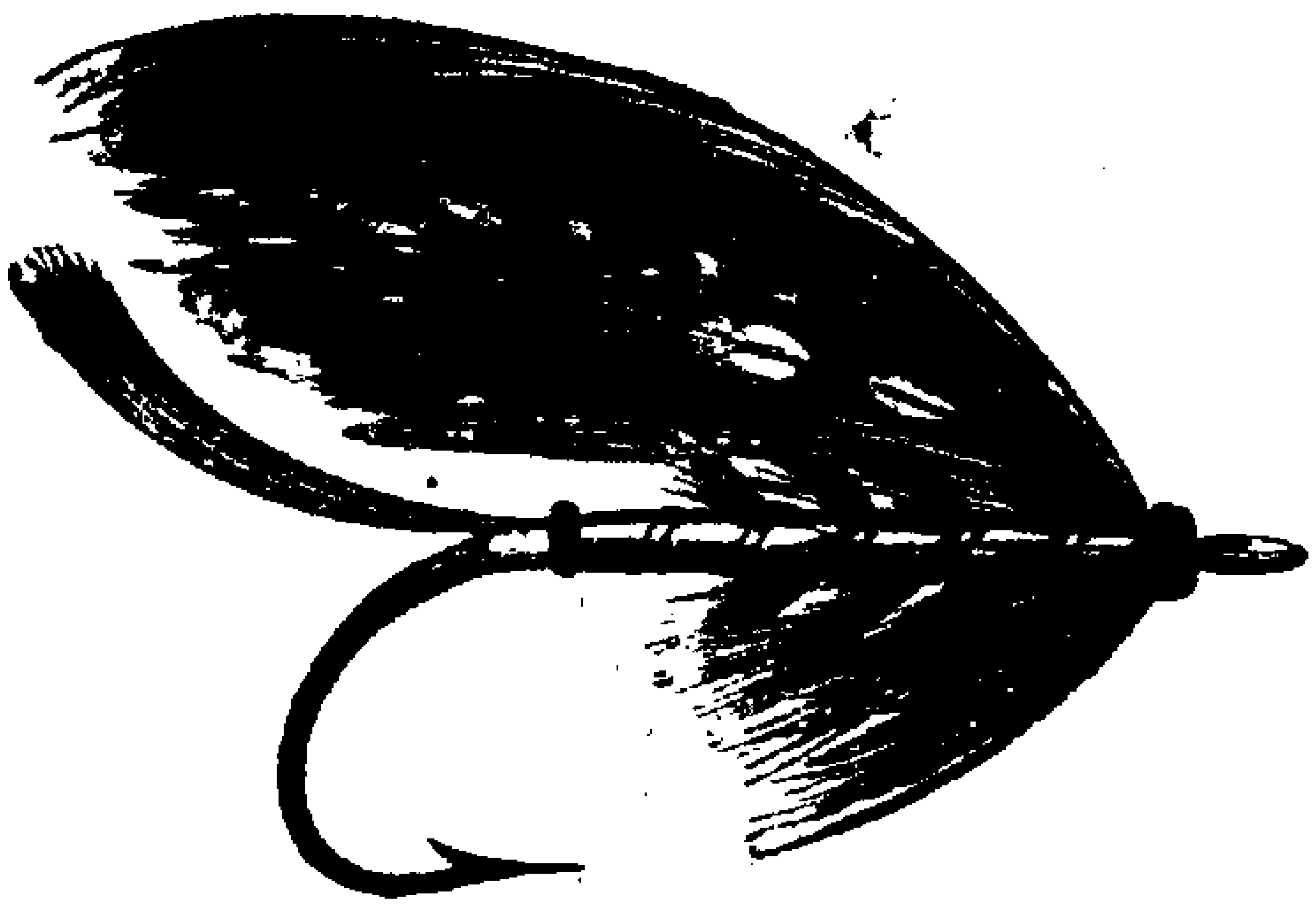
This fly retains, and—if a prophecy be admissible—will continue to retain, its high reputation on many of our best salmon rivers. The combinations in the body are, in my opinion, absolutely free from blemish, and reflect great credit upon the inventor, a dexterous and persevering fisherman who has given his name to the fly, and who is further known as the winner of the Derby in Wild Dayrell's year. Another variety was introduced by the late Mr. John George Children, of Halstead Place, but the original here given is not only considered better, but is certainly more popular. The great mistake generally made is in overlaying the body with too many Indian crow's feathers.



'THUNDER AND LIGHTNING.'

Tag: Gold twist and yellow silk.
Tail: A topping.
Butt: Black herl.
Body: Black silk.
Ribbed: Gold tinsel.
Hackle: From first turn of tinsel, orange.
Throat: Jay.
Wings: Mallard, in strips with a topping.
Sides: Jungle fowl.
Horns: Blue macaw.
Head: Black herl.

This—another creation of the redoubtable James Wright—is, in my estimation, as a clear-water fly, the best that he has ever invented. It is a well-recognised fact that salmon 'take' better just as the water is beginning to rise after rain, and in such conditions—without detracting in any way from its merits under other circumstances—I know of no fly that can be recommended in preference. It is not, however, a pattern that I should select when a river is at all inclined to be muddy; but in heavy rains and boisterous weather it is the one of all others entitled to a patient trial. In fact, to perpetrate a mild joke, 'Thunder and Lightning' is the natural accompaniment of a storm.



THE 'SILVER GREY.'

Tag: Silver twist and yellow silk.

Tail: A topping, unbarred summer duck, and two strands of blue macaw.

Butt: Black herl.

Body: Silver tinsel (flat) ribbed with silver tinsel (oval).

Hackle: From first turn of ribs, a silver-white coch-y-bonddu.

Throat: Light widgeon.

Wings: Silver pheasant, bustard, golden pheasant tail, pintail, powdered blue macaw, gallina, swan dyed yellow; two strips mallard above, and a topping.

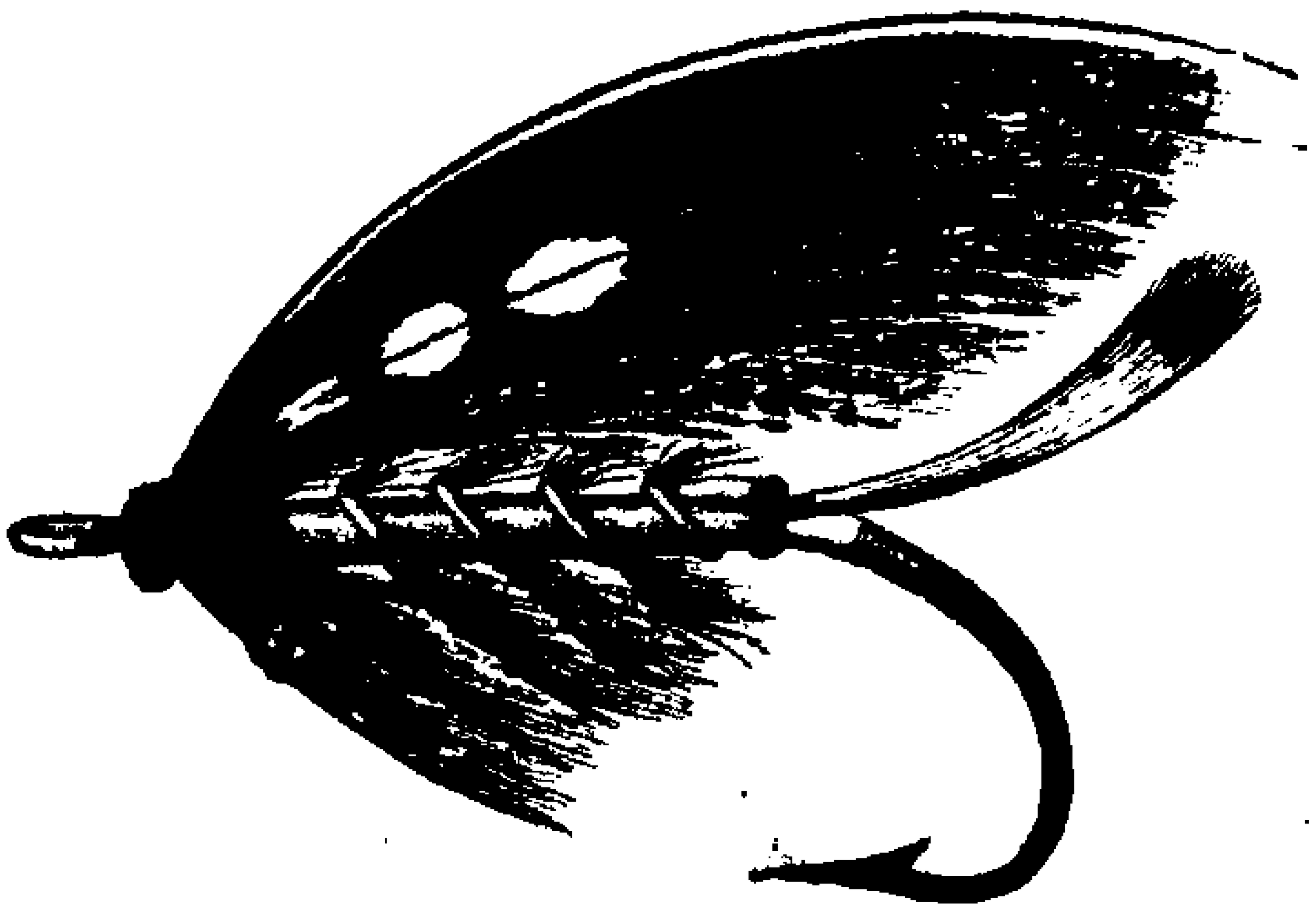
Sides: Jungle fowl.

Horns: Blue macaw.

Head: Black Berlin wool.

The Silver Grey, another of the Sprouston list, also by James Wright, is a very old and well-established pattern.

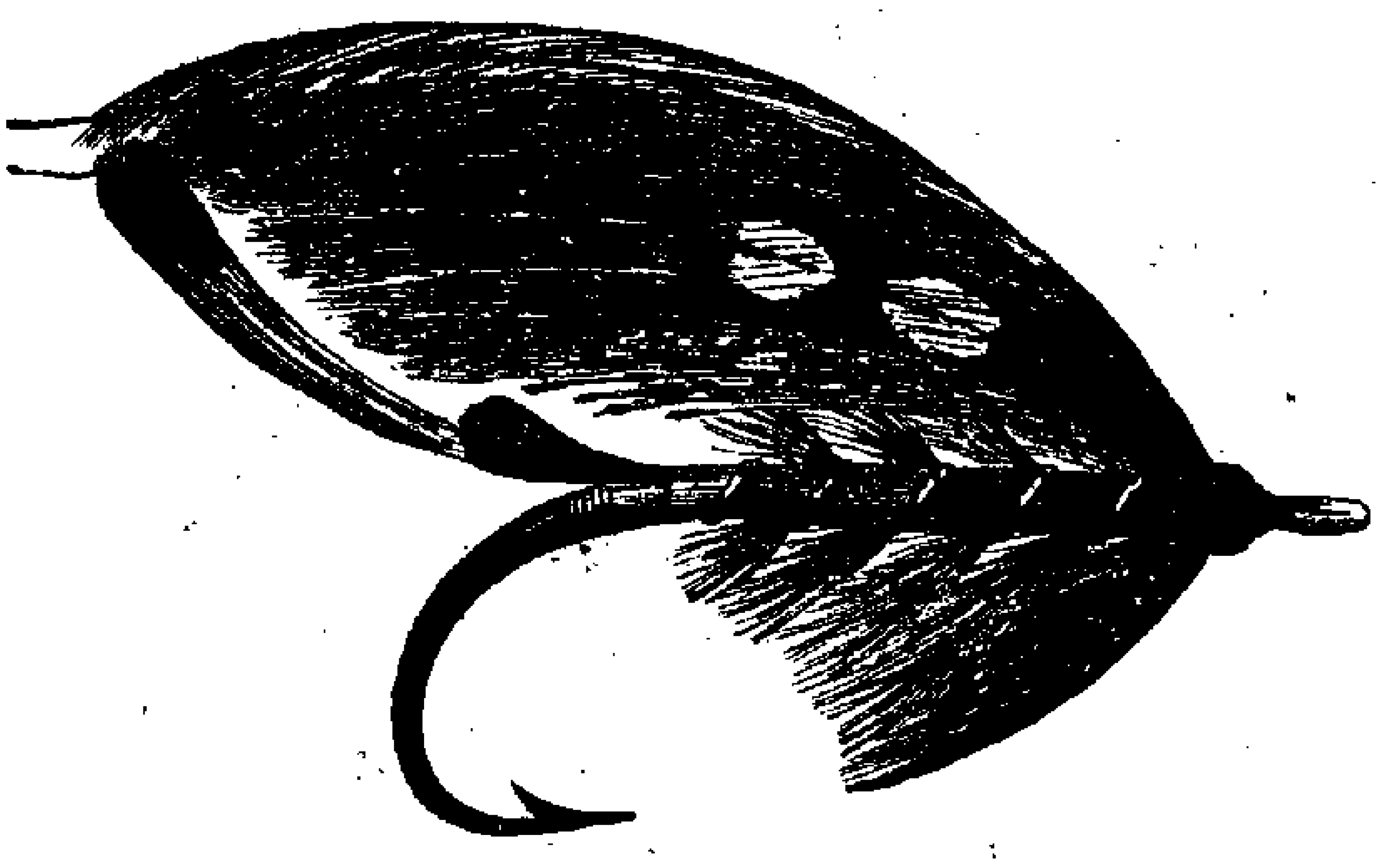
I have cast this fly for years with considerable success in all kinds of pools and corners, and it seems to be equally effective either in bright or dull weather, in open or shaded places. In rivers where the fish are proverbially sulky it is a great favourite, and I have one or two instances recorded of its success in out-of-the-way districts 'where no fishers abide.' The Silver Grey makes a capital change with the Lion—the two most valued silver-bodied flies in general use. Many anglers are shy of tinselled bodies, but either of these patterns can be safely recommended, and, the question as to size being correctly estimated, exceptional sport is frequently obtained with them.



THE 'LION.'

Tag: Silver twist and light yellow silk.
Tail: A topping.
Butt: Black herl.
Body: Silver tinsel (flat) ribbed with silver tinsel (oval). One fifth part being left at the shoulder for dark scarlet seal's fur.
Hackle: Natural black, three parts down the body.
Throat: Gallina.
Wings: Commencing with a few fibres of tippet, sword feather of the golden pheasant, and peacock herl. Yellow macaw, red macaw, bustard, golden pheasant tail, teal, gallina; with two strips of mallard above, and a topping.
Sides: Jungle fowl.
Horns: Blue macaw.
Head: Black Berlin wool.

The Lion, as already mentioned, is another exceptionally good silver-tinselled pattern. Some of our most distinguished fly-fishers adduce an imposing array of facts and arguments in its favour, and whatever local opinions may be, anglers will do wisely to give it a trial. When the water is slightly stained, it is, perhaps, a little more attractive than the Silver Grey, and may be used with advantage one size smaller, speaking comparatively, the materials in the dressing being more conspicuous. In the event, however, of one or two downright refusals, the Jungle—which cannot be too black and white as a rule—should be nipped entirely off. The Lion is another invention of James Wright.



THE 'CAPTAIN.'

Tag: Silver twist and light blue silk.

Tail: A topping and chatterer.

Body: Two turns of light orange silk, two turns dark orange seal's fur, two turns dark red-claret seal's fur, and finish with dark blue seal's fur.

Ribbed: Silver tinsel.

Hackle: A white coch-y-bonddu dyed light red-claret, from the orange silk.

Throat: Blue hackle and gallina.

Wings: Pintail, teal, gallina, peacock wing, Amherst pheasant, bustard, and golden pheasant tail; swan dyed light orange, dark orange, dark claret, and dark blue; with two strips mallard above, and a topping.

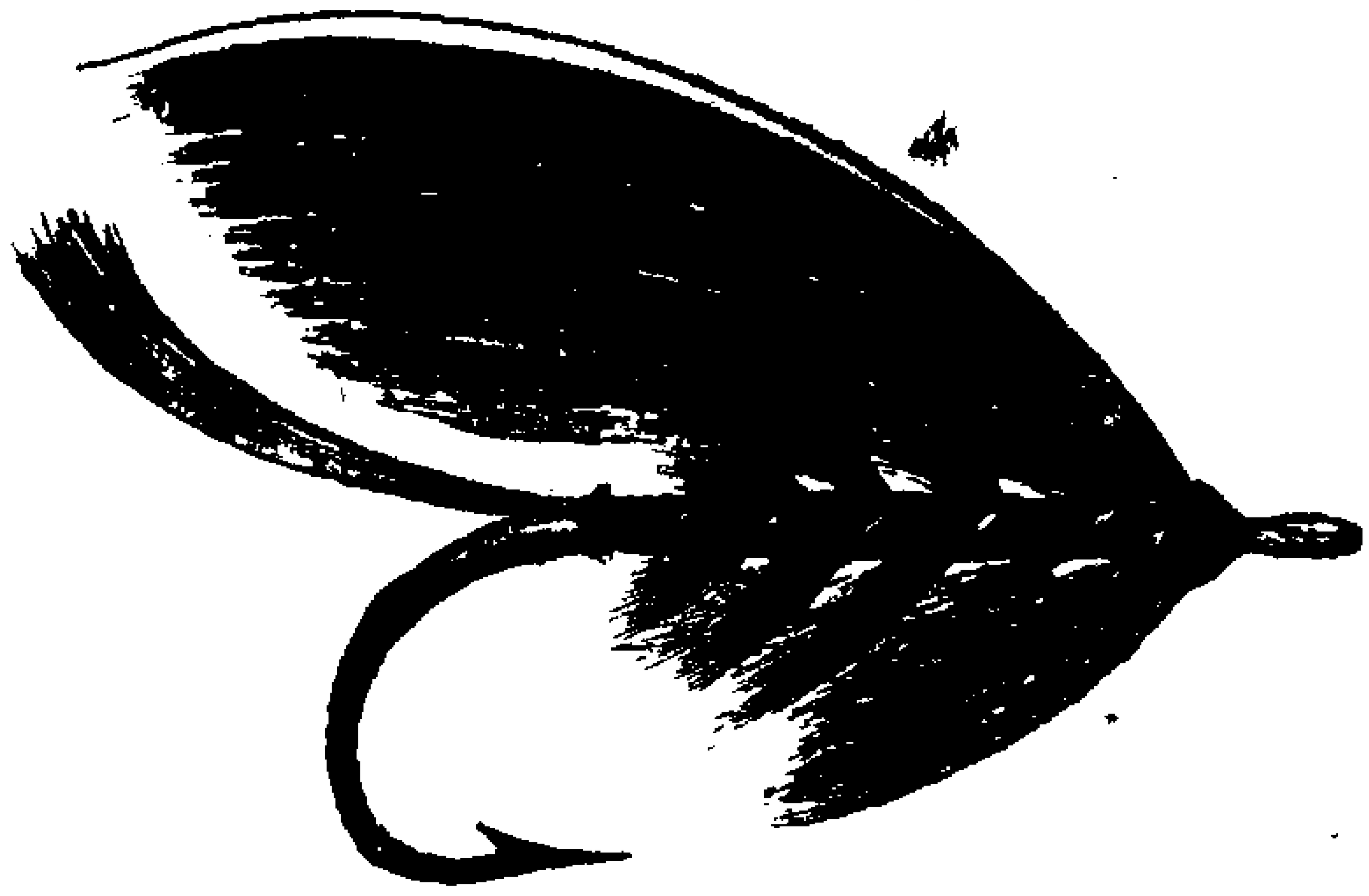
Sides: Jungle fowl.

Horns: Blue macaw.

Head: Black herl.

The Captain is one of my own patterns, and was introduced by Bernard, of Church Place, Piccadilly, with another of mine called the Champion, many years ago. But it has long since adopted the name of the Poinder in Scotland, and is perhaps better known there by that erroneous appellation.

It is rather difficult to recommend this fly without appearing to blow my own trumpet; at the same time I shall probably be justified in saying that as a general pattern it holds its own everywhere. I have had good sport with it dressed in all sizes and very rarely meet with disappointment, especially as a change when the Durham Ranger, for example, has moved a fish. It should be dressed very small for lakes or shallow streams.

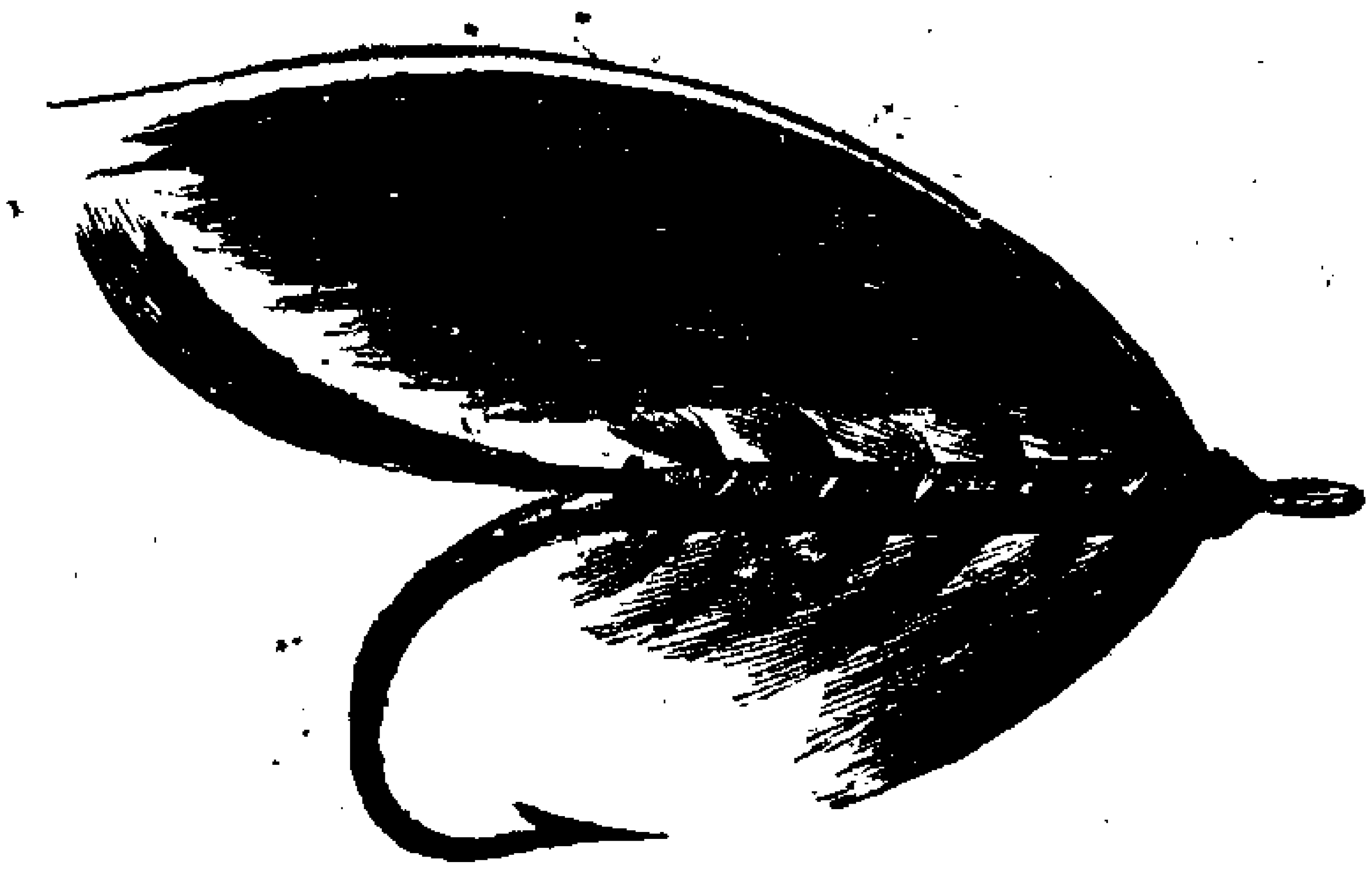


THE 'BLACK JAY.'

Tag: Silver twist and dark yellow silk.
Tail: A topping.
Butt: Black herl.
Body: Two turns black silk ; the rest black seal's fur.
Ribbed: Silver tinsel, preceded by silver lace for large patterns.
Hackle: Natural black from silk.
Throat: Jay.
Wings: Tippet, scarlet ibis and gallina; golden pheasant tail, bustard, teal, black cockatoo's tail, and swan dyed green and dark yellow; with two strips mallard above.
Horns: Blue macaw.
Head: Black herl.

A complete contrast to the preceding series is the Black Jay, a pattern for the introduction of which I am also responsible, and which has been in general use for more than a quarter of a century, though invented long before that. Unlike the rest of the 'jays' it will be found most useful in dark water, and although it kills well dressed small, it shows perhaps a more marked superiority when tied on very large hooks. I then generally add jungle to the wings and a topping.

There are numerous imitations of this fly, all varying trivially in minor details ; but I think the formula here given will be found satisfactory upon hooks up to an inch and a quarter in length, without any alteration or addition.

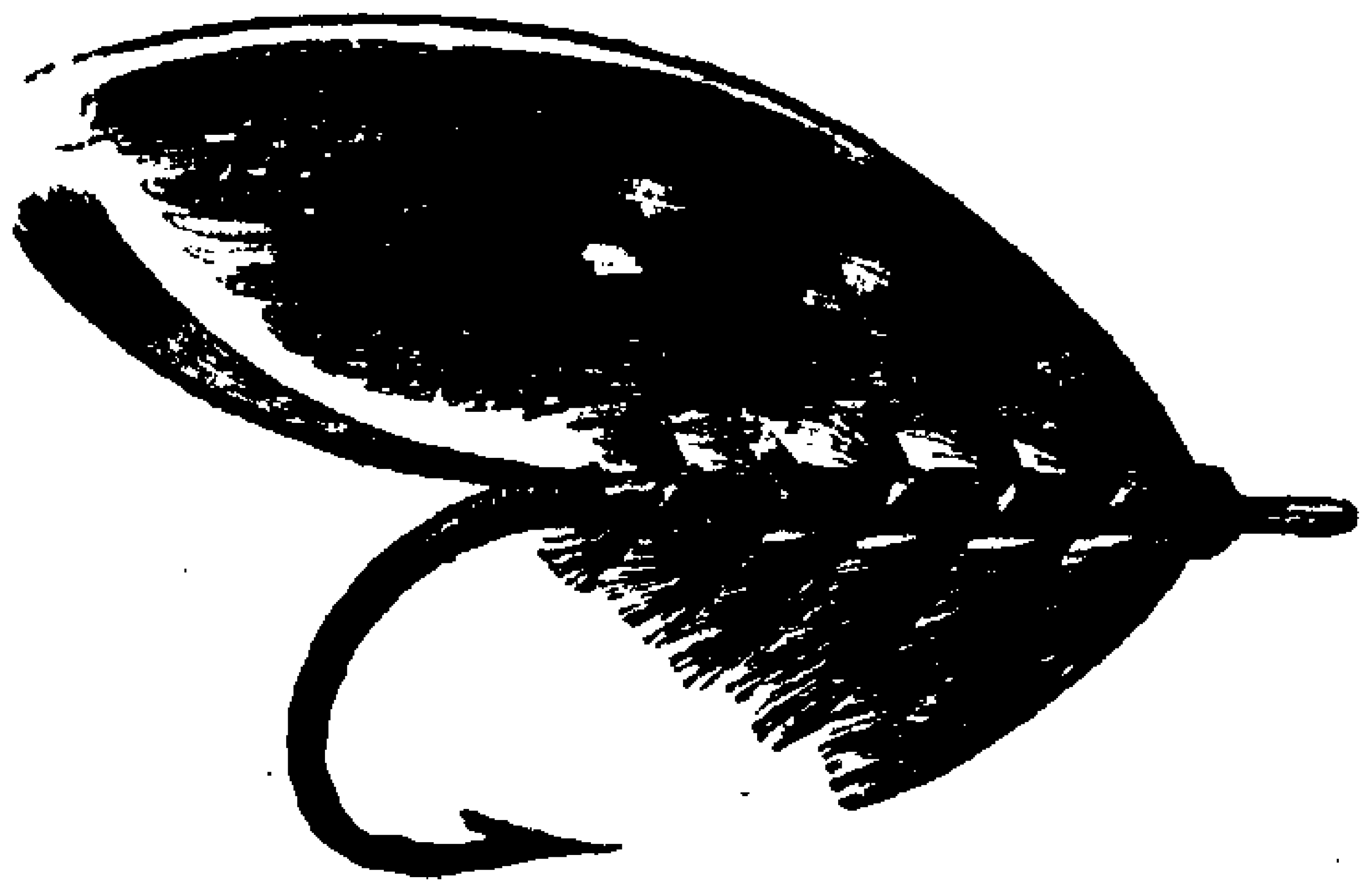


THE 'CLARET JAY.'

Tag: Silver twist and light yellow silk.
Tail: A topping, scarlet ibis, and gallina.
Butt: Black herl.
Body: Two turns light red-claret silk, the rest claret seal's fur.
Ribbed: Silver tinsel.
Hackle: Claret.
Throat: Jay.
Wings: Teal, tippet, and florican; light mottled turkey, parrot, golden pheasant tail, gallina, and dark bustard; swan dyed light yellow, yellow-green (or powdered blue), yellow and claret; with two strips mallard above.
Sides: Yellow macaw and ibis, in married strips.
Horns: Blue macaw.
Head. Black herl.

The Claret Jay is the best known and most popular of the 'jay set.' In rivers where medium-sized flies are used the 'Claret,' as it is generally termed, kills as well as anything. There is one variety of it that may be mentioned having yellow seal's fur instead of light red-claret silk on the body, but the description given is that of the original dressing.

These three sombre patterns—the Black and Claret Jays and the Dirty Orange—are more suitable for medium sized rivers, and although they are rarely tied on very large hooks, there are plenty of flats, streams, nooks, and corners in our largest rivers where I am satisfied they could be tried with considerable success on hooks up to, say, No. 2.



THE 'DIRTY ORANGE.'

Tag: Gold twist and light blue silk.
Tail: A topping and tippet.
Butt: Black herl.
Body: Two turns light orange silk; the rest light dirty orange seal's fur.
Ribbed: Gold tinsel.
Hackle: Light dirty orange from silk.
Throat: Jay.
Wings: Ginger turkey, gallina, and strands of breast feather of golden pheasant; bustard, peacock herl, golden pheasant tail and strands of black turkey with white tips; red macaw, swan dyed dirty orange and dark blue, with two strips of mallard above.
Sides: Summer duck.
Horns: Blue macaw.
Head: Blue herl.

Another of the Jays, and also a popular favourite, is the Dirty Orange. Salmon fishers, and novices more especially, are often so eager to try every imaginable novelty that makes its appearance in the way of flies that they are unconsciously apt to neglect the more quietly dressed but well-established patterns. So far as appearance goes, there are doubtless many patterns more taking, but I have included this and the two preceding flies in my standard list advisedly, believing that in the long run they will be found to justify the selection.

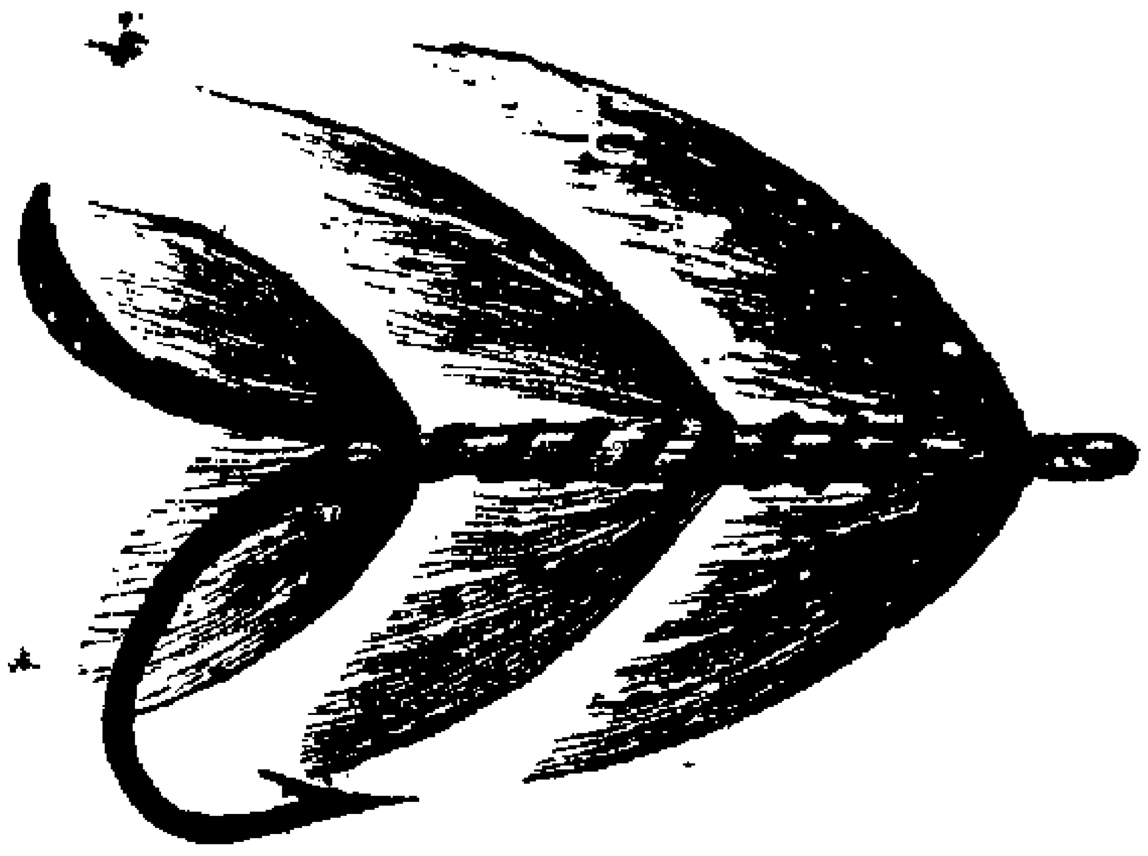
THE 'FIERY BROWN.'

Tag: Gold twist and light orange silk.
Tail: A topping.
Body: Fiery brown seal's fur.
Ribbed: Gold tinsel.
Hackle: From first turn of tinsel, fiery brown.
Wings: Tippet strands between broad strips of mallard.
Horns: Blue macaw.
Head: Black herl.

N.B.—There is also another variety by the inventor (Michael Rogan), having a blue hackle alongside the fiery brown hackle down the body.

The Fiery Brown, facetiously termed 'The All Ireland Fly,' is gradually becoming more popular elsewhere, and many a victory won in 'despite of fate' may be credited to this singularly attractive yet plain-looking pattern. Indeed, however unpropitiously the campaign may appear to be going, Michael Rogan's ingenious offspring will very likely retrieve the situation, whether the *champ de battaille* be in the north or south, in pool, stream, or rapid. Rogan's mode of dyeing the seal's fur and hackles is most successful, and far superior to all others for securing the fierce flame-like tint desired.

The Fiery Brown is another fly that seems to answer best when dressed on medium-sized hooks, though I have never tried it, or even seen it tied very large.



THE 'SPRING GRUB.'

Tag: Silver twist and light blue silk.

Tail: Scarlet ibis and blue macaw in married strips.

Body: In two sections having three hackles as illustrated: in the place of the butt.

Butt: A furnace hackle dyed orange. The first half of the body yellow silk ribbed with black chenille.

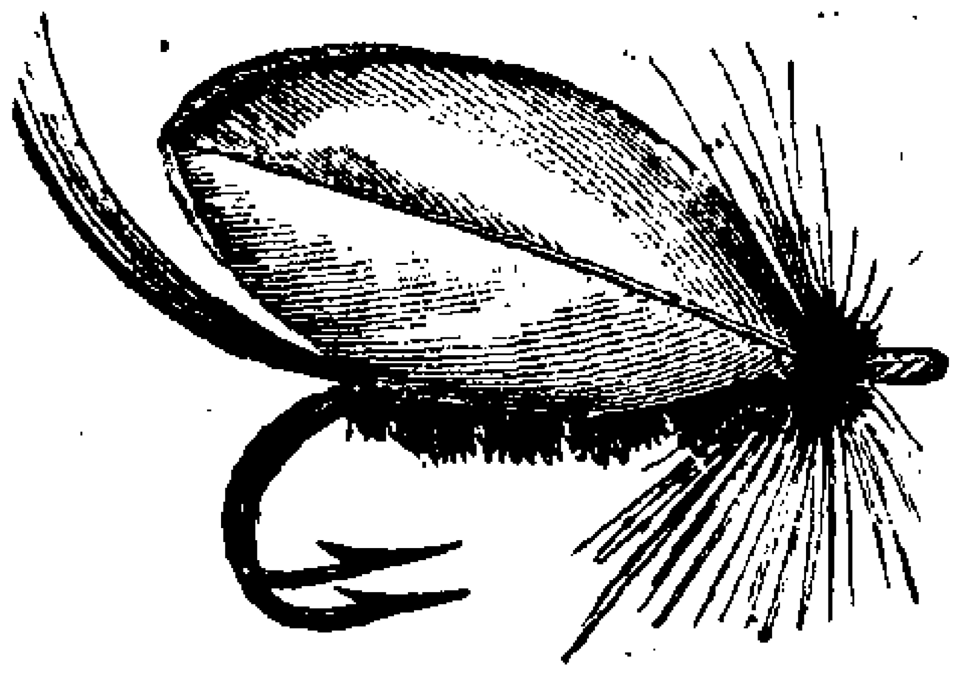
In the centre is placed a natural blue hackle. The second half of the body black silk ribbed with silver tinsel, and the shoulder, or head hackles, a natural coch-y-bonddu, and a gallina dyed dark orange.

This is one of my earliest of the scorpion tribe, and belongs to a numerous collection of wingless flies which are coming more and more into fashion. There are times when fish require a good deal of coaxing, and on many days they will rise in pool after pool merely, as it were, for the sake of inquisitiveness. Upon these occasions especially I make it a rule to tone down the colours by mixing them with deeper shades, and dress then and there a fly of this description, if, that is, I do not happen to have a suitable one by me. The pattern here given I have often found a good change with Excelsior, Jock Scott, &c. I have found these wingless 'nondescripts' kill well wherever I have fished, and every standard fly should, I believe, be partially imitated in a similar fashion.

The '*Spring grub*' completes the list of general standard flies, with one or other of which, from the beginning to the end of the season, and in any part of the United Kingdom, salmon are to be killed if at all.

[NOTES BY THE EDITOR.]

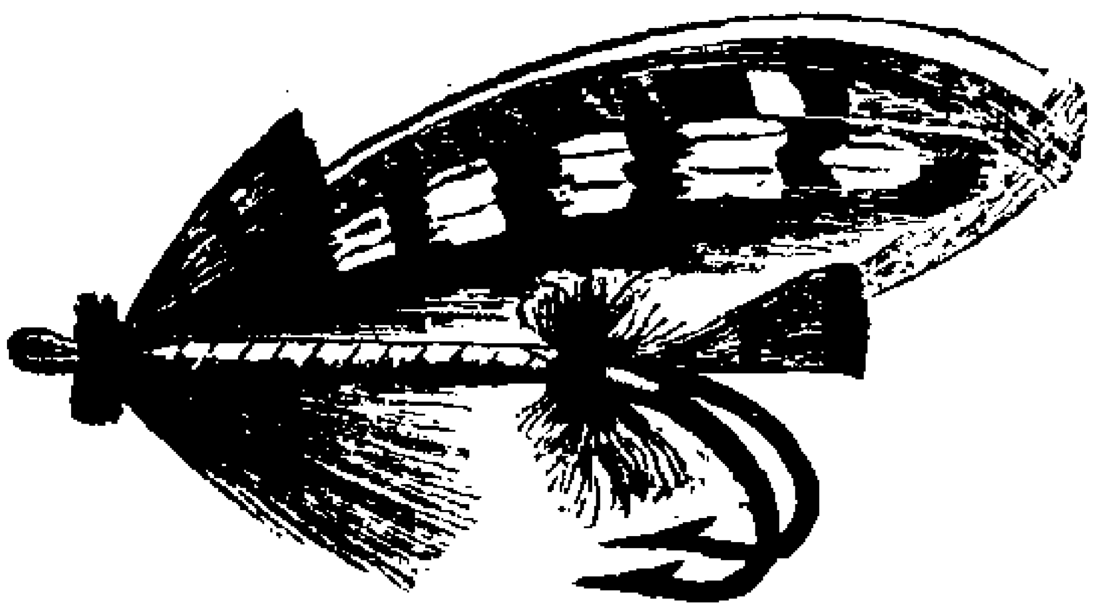
To Major Traherne's capital selection of standard flies I should be disposed to add half a dozen patterns which in my own experience I have found to be generally 'good killers' on the salmon rivers of the United Kingdom. The descriptive formulæ of these flies are by Mr. Charles Farlow, 191 Strand.



THE 'BEAUFORT MOTH.'

Tag: Gold tinsel; *Tail:* Golden pheasant topping; *Body:* Bronze peacock herl, ribbed with gold tinsel; *Hackle, Throat:* Red cock's (throat hackle only); *Wings:* Two small white hen feathers; *Head:* Peacock herl.

This fly will be found very useful during the last hours of daylight if fish are shy. It has never failed to kill on any river on which it has been tried in England, Scotland, Ireland, Wales, Canada, and Labrador.



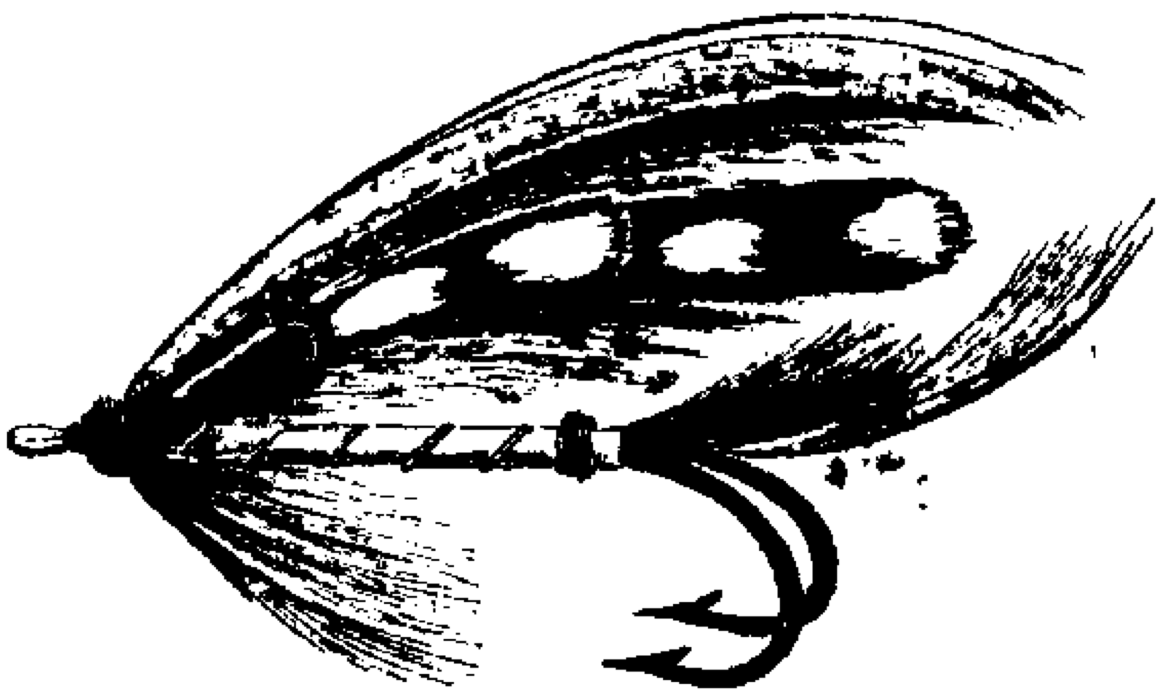
THE ORIGINAL 'SILVER WILKINSON.'

Tag: Silver tinsel; *Tail:* Golden pheasant topping, and short tippet feather; *Butt:* Scarlet pigswool; *Body:* Silver tinsel ribbed with silver oval or twist; *Hackles:* Light blue at shoulder, with magenta over it; *Wing:* Under, two strips of Canadian wood duck feather barr'd, and a few fibres of red macaw; two long jungle cock feathers, and two short ditto; three golden pheasant toppings, and short tippet feather, tied in whole (*not* as a hackle), over all; *Cheeks:* Blue chatterer; *Horns:* Blue and yellow macaw; *Head:* Black ostrich herl.

An excellent fly on a bright day, but the strongest point in its success

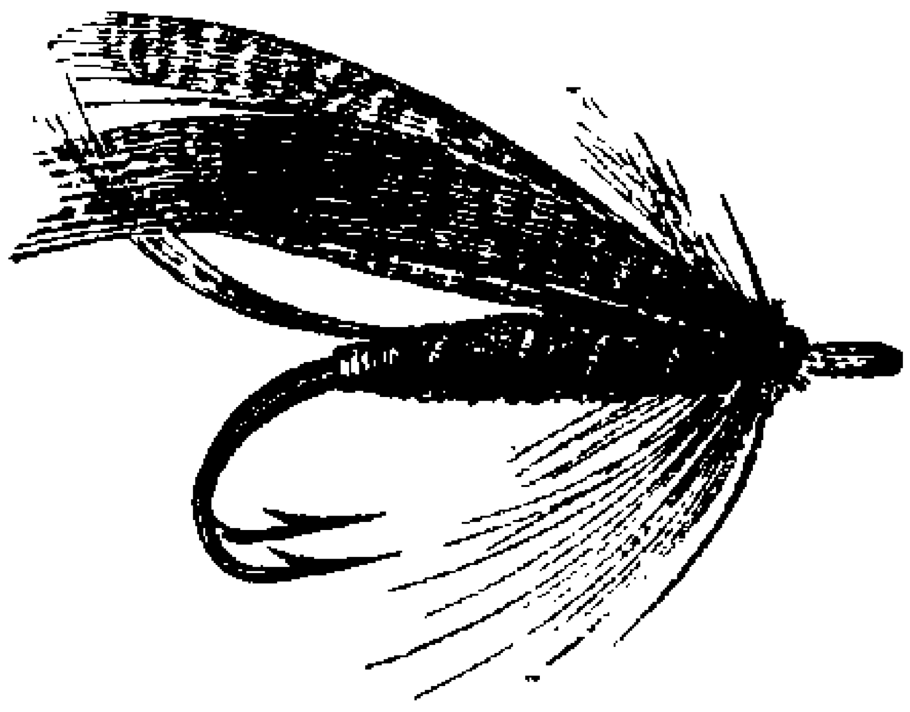
on the Tweed is in a full water on a cold day. Sometimes when the 'Silver Doctor' fails, the spotted jungle cock wing appears to exercise an attraction; but it is a killing fly in any river.

'SILVER WILKINSON' (DUKE OF BEAUFORT'S PATTERN).



Tag: Silver thread; *Tail:* Golden pheasant topping and scarlet ibis; *Butt:* Scarlet wool; *Body:* Silver tinsel, ribbed with silver oval; *Hackle:* Majenta at shoulder, dark blue at throat; *Wing:* Fibres of bustard, red and mauve dyed swan feathers, golden pheasant tail and tippet, wood-duck not barr'd, white turkey, two long and two short jungle cock feathers, topping over all; *Cheeks:* Light blue chatterer; *Horns:* Blue and yellow macaw; *Head:* Black wool.

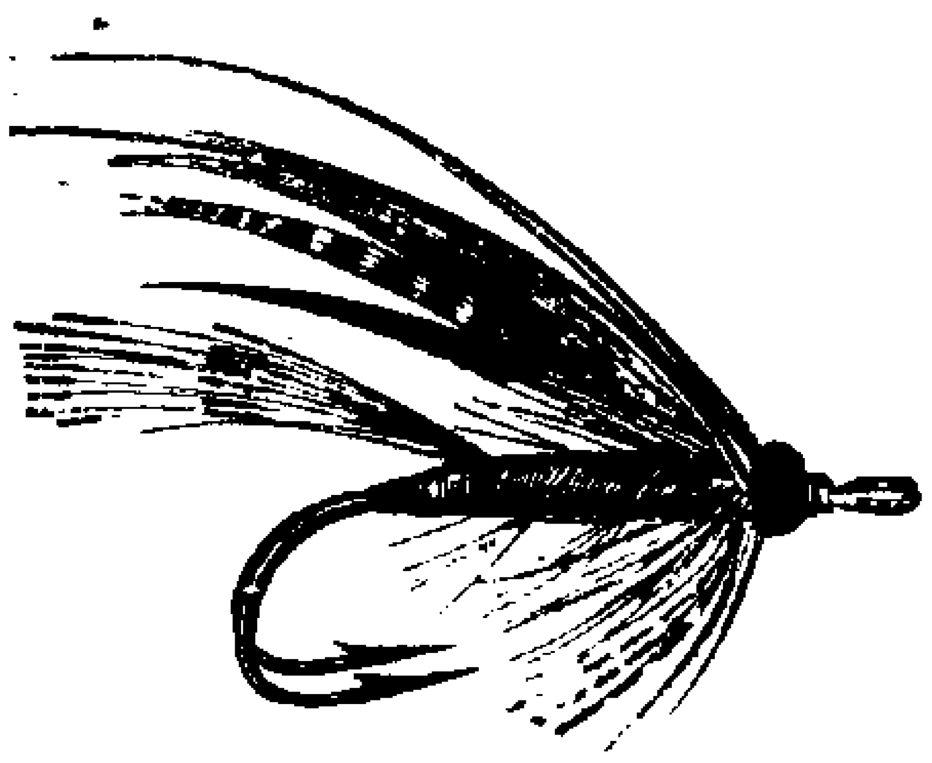
THE 'BLACK FAIRY.'



Tag: Gold twist and golden yellow floss; *Tail:* Golden pheasant topping; *Body:* Black wool ribbed with gold twist; *Throat:* Black cock's hackle; *Wings:* Brown mallard; *Head:* Black ostrich herl.

As universally killing a fly as even Jock of Scot. I prefer it on a dark day; other people fancy it on a bright one.

'CRITCHLEY'S FANCY.'



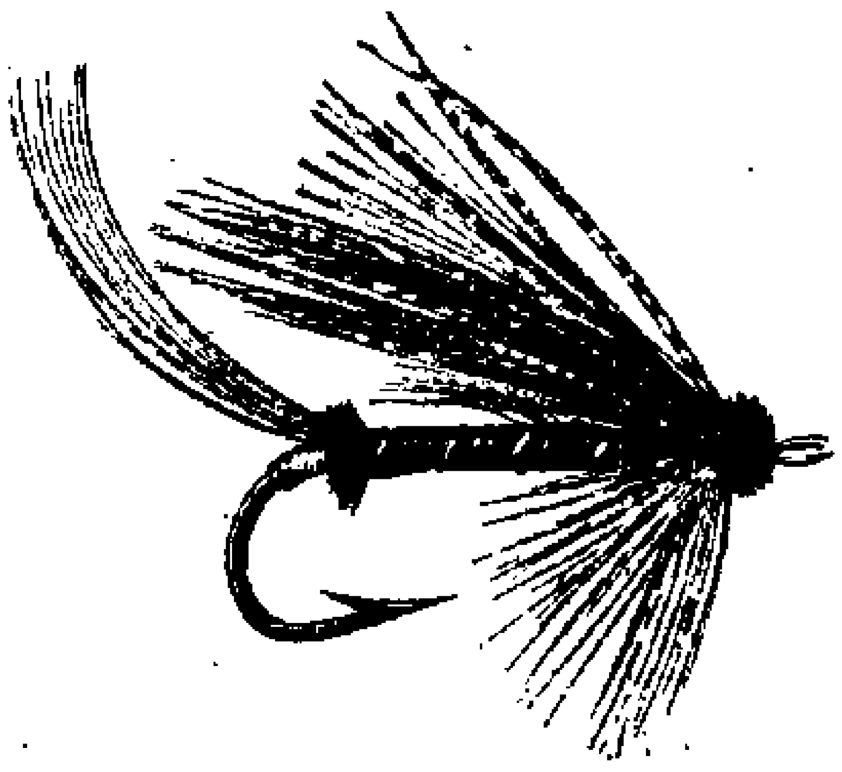
Tag: Silver twist and pale blue floss silk; *Tail:* Golden pheasant topping and fibres of golden pheasant tippet; *Body:* Pale orange floss silk ribbed with silver twist; *Hackle:* Orange run down body; *Throat:* Teal; *Wings:* Fibres of teal, dun turkey, and red macaw; *Horns:* Blue and yellow macaw; *Head:* Black ostrich herl.

This fly was the only one at which fish would rise in the Ristigouche river at the end of June and beginning of July, 1879, and Mr. Critchley, who alone did any good on the water at the time, was kind enough to give me some of his patterns. The Ristigouche runs between Lower Canada and New Brunswick.

THE 'LEMON-TIPPED GREY MONKEY.'

Tag: Silver twist and yellow floss; *Tail:* Golden pheasant topping; *Body:* Grey monkey fur ribbed with silver oval; *Hackle:* Green olive run down body; *Throat:* Yellow hackle; *Wings:* Fibres of brown mallard, golden pheasant tippet, golden pheasant tail, bustard, guinea fowl, and green parrot; *Horns:* Blue and yellow macaw; *Head:* Black ostrich.

A very useful fly. When there is not sun enough to make the 'Silver Grey' sparkle this pattern is often very killing.



THE 'GREEN GROUSE' AND THE 'BLUE JAY.'

'GREEN GROUSE.'—*Tag:* Silver twist and medium orange floss silk; *Tail:* Fibres of magenta and pale blue dyed swan and golden pheasant tippet; *Body:* Light green floss silk ribbed with silver tinsel; *Hackle:* Grouse run down body; *Throat:* Blue jay hackle; *Wings:* Fibres of silver pheasant, brown mallard, red macaw, and golden pheasant tippet; *Head:* Black ostrich herl.

'BLUE JAY.'—*Tag:* Silver tinsel; *Tail:* Golden pheasant topping; *Butt:* Black ostrich; *Body:* Medium blue floss silk ribbed with silver tinsel; *Hackle:* Blue jay half way down body; *Throat:* Yellow hackle; *Wings:* Fibres of bustard, golden pheasant tippet, green parrot, dyed purple swan, and guinea fowl; *Head:* Black ostrich herl.

The Green Grouse, and the Blue Jay, are the two best flies for the Blackwater, co. Cork, Ireland.

BEAUFORT.]

CASTING.

I have so far given all the information I can think of that may be of use as a guide to the selection of the principal requisites for an outfit for salmon fishing. There are, however, several other articles to make it complete, such as fly books, tin boxes, &c.; but these do not require any mention in detail, and, as they will not make or mar sport, the choice of them may be safely left to the angler's fancy.

The first thing a beginner has to learn is, how to cast overhand, and he should commence work with a short line, say from ten to fifteen yards. When he can make a tolerable cast with this length, he may gradually lengthen the line; and if he perseveres and works upon a sound principle, and has provided himself with a rod suitable to his powers of casting, he will gradually become master of it, and be able, with tolerable ease, to cast a line of twenty or twenty-five yards, which is as far as will be required for general purposes. To make a clean cast overhand, it should be borne in mind it is necessary that the line be lifted out of the water to the very end to where the fly is attached; and that it should be thrown to its fullest extent in the backward cast (that is, behind the angler's back) prior to the forward cast being made. If this be neglected, the fly will as often as not be cracked off, and the line sent out in a slovenly corkscrew fashion, or else both line and fly will fall in a heap together in the water, the disadvantages of which will be explained later on. To make a cast in a workmanlike manner the line should be sent clean out, down, and across stream at an angle of not less than 45° (see D E, fig. 1). As soon as the fly touches the water, the rod, supposing the angler to be standing at A, should be held in the position A D at an angle of about 10° down stream from a line taken from where the angler stands straight across to the opposite bank, and it should remain in that position until the fly has reached mid-stream, G, after which the point should gradually follow the

direction of the fly, H, until the cast is completed, A B K, which will bring the rod into a favourable position, A B, to make a fresh cast; the dotted line, E F G H K, marks the course of the fly from beginning to end of the cast. The advantage of making the fly work in the manner I have explained is that every fibre of the wing and hackle will be in their right position; it will assume a natural, lifelike appearance; and, owing to the slow rate and direction it is travelling, every fish in the pool will have

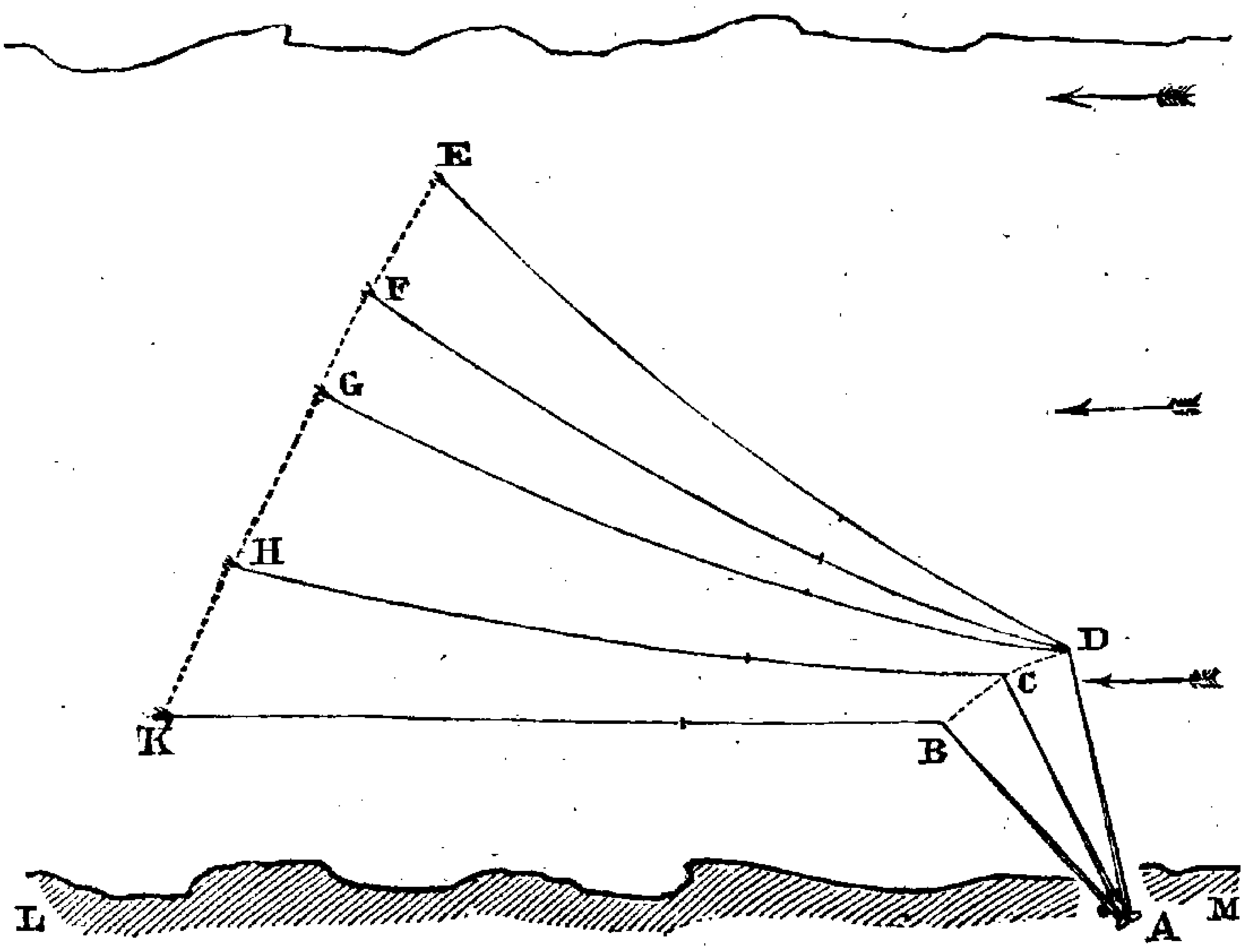


FIG. I.

a fair chance of discerning its colour; and if he rises, he will be more likely to be well hooked than by any other method.

If the stream is of even rapidity from bank to bank, it will be a comparatively easy matter to make the fly work in the manner I have explained; but should the stream run more rapidly at the middle than at the sides, which is generally the case, a 'belly' in the line must necessarily be made as soon as the line touches the water. If this is allowed to remain, the

fly cannot work as it ought to, which will be explained in the diagram, fig. 2. A B represents the rod, supposed to be in angler's hands standing at A. B C, the line cast, as it should be, down and across stream. B D represents the belly made in the line, which will increase, D E F G H, until the cast is completed at L K the point of the rod meanwhile being shifted from B to L

The disadvantages of a fly working in the manner I have

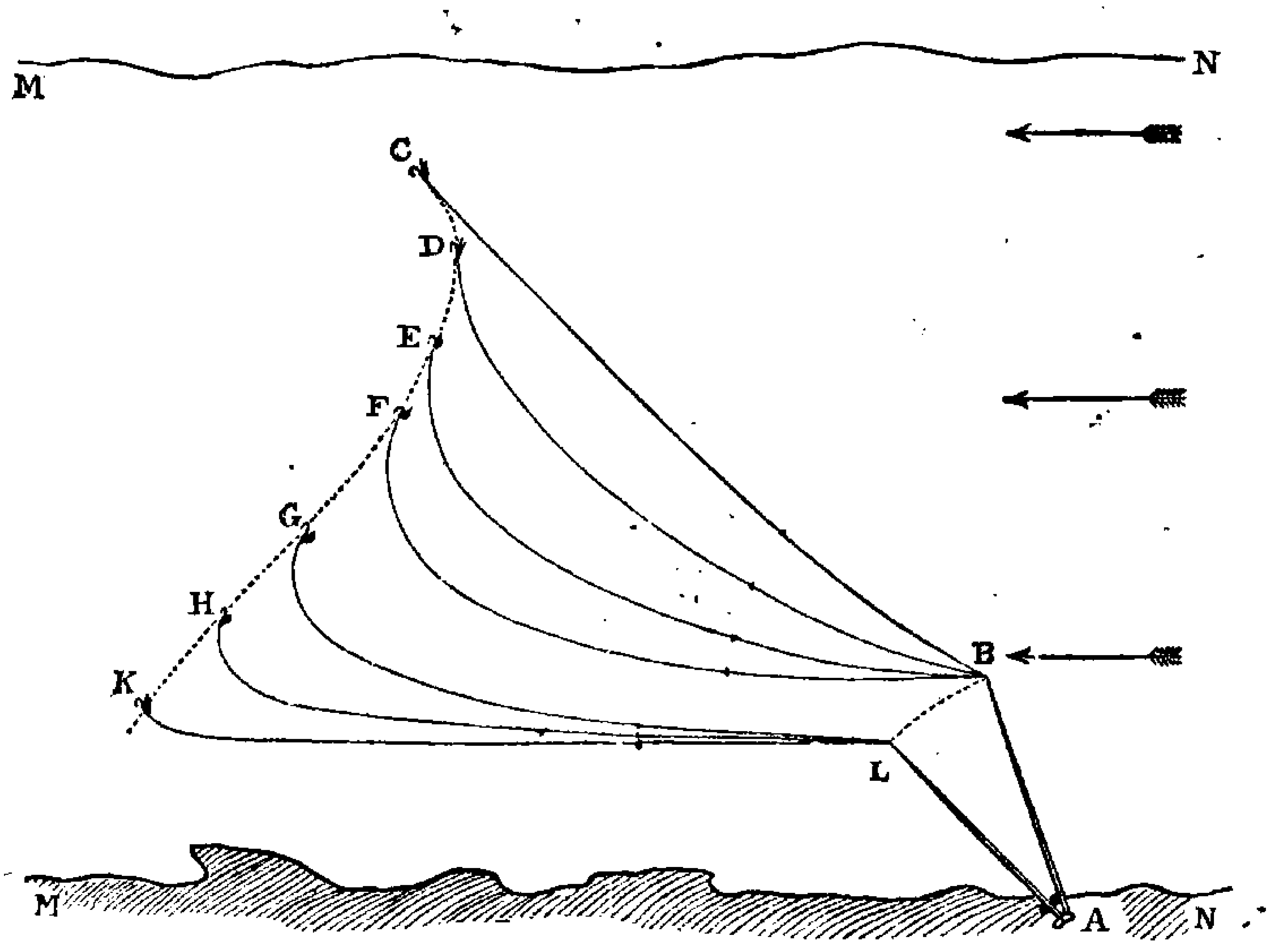


FIG. 2.

shown when a fish rises, are, I think, obvious ; and I will explain this more fully in describing a straight-across cast.

There is a way of taking the belly out of a line, which was taught me by an old fisherman when fishing the Kirkcudbrightshire Dee in my younger days. I dare say many of my readers will recollect old Jemmy Gordon, professional salmon fisherman at Kirkcudbright, who was called the 'Emperor,' and right well he deserved the title, for he knew more about salmon fishing than any professional I have ever met, and I acquired a

store of knowledge from him that I have found useful ever since. He is dead and gone now, and the like of him I shall never see again. It was Jemmie that pointed out to me the evil of allowing a belly to remain in my line, and who taught me how to rectify it.

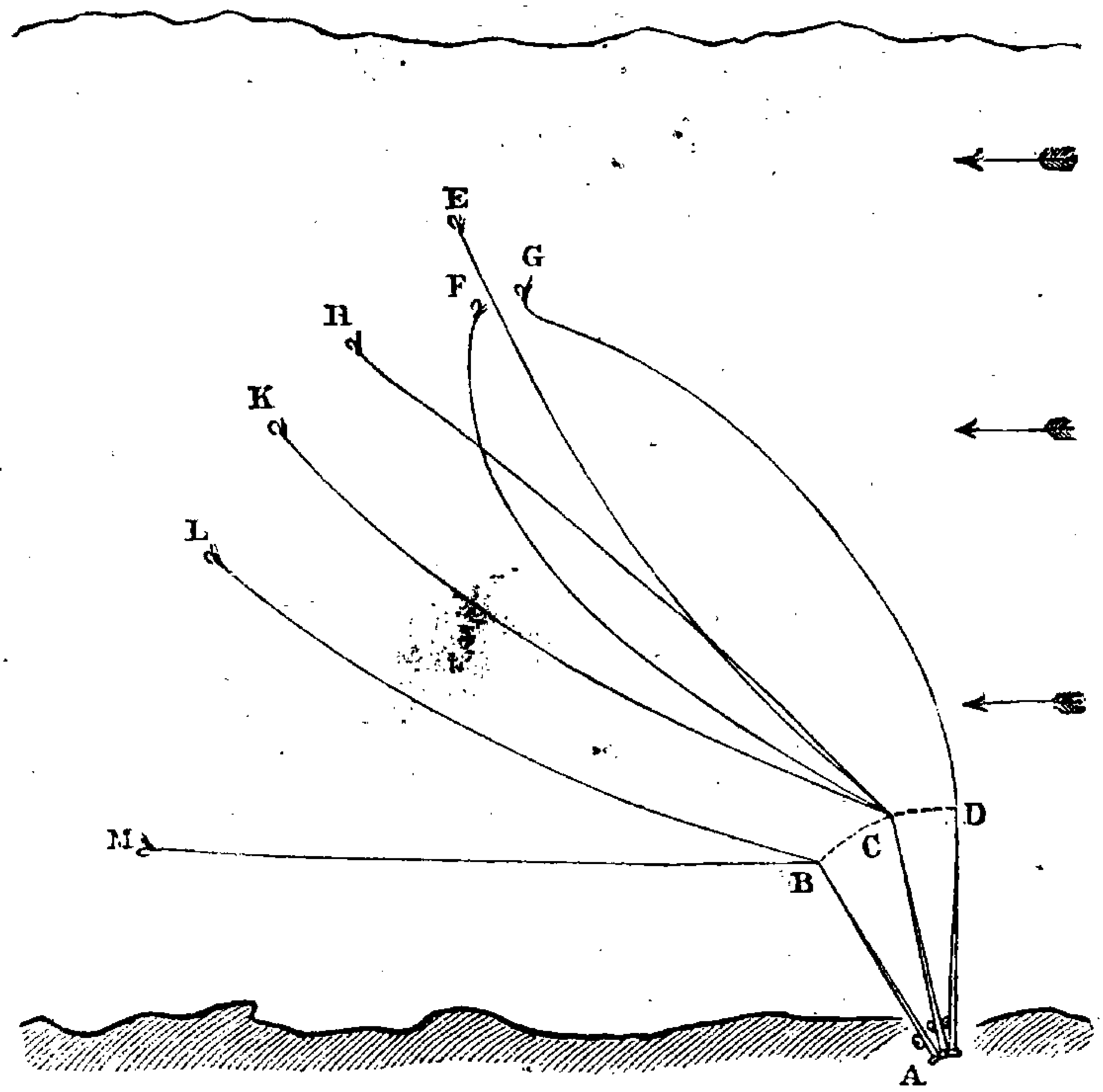


FIG. 3.

To accomplish it is a knack which can only be acquired by practice, but I think it of such importance that I will endeavour, by the aid of the diagram, fig. 3, to explain how it is done.

A C represents the rod and C E the line—as first cast, in correct position. C F represents the belly, almost instantly made. By making a back-handed upward cast, the belly, C F, the outward

curve of which is facing down stream, is changed in its direction to D G; the outward curve facing up stream, the position of the rod being shifted from C to D the action of the stream will then straighten the line, which will gradually get into the position C H, the position of the rod being shifted back to A C; the fly will then work gradually across stream, the rod following the direction of the fly until the cast is completed at A B M. Few fishermen I have watched fishing take the trouble to take the belly out of their line, and are content to let the fly work in the same position as it was cast; but if they would look at it in the light I see it, I feel convinced they would be of my opinion.

Many experienced fishermen advocate casting straight across stream, and assert that by adopting this method many more fish are risen than by any other; they may be right, but I much doubt it, and maintain that, even should more fish be risen by the straight-across method, more fish are killed by casting down and across.

A reference to diagram, fig. 4, will show how a fly works cast straight across stream, A B C, from the time the fly touches the water at C to when the cast is completed, A B E. The course of the fly is represented by the dotted line C D E; the position of the rod cannot be altered, as it would make matters worse. It will be seen that the fly is travelling from first to last head foremost down stream, the cross action of the stream on the fly will put all its feathers out of gear, the fish in the pool will get but a momentary sight of it, and will have no time to discern its colour, and if they rise at it, by the time they reach the surface of the water the fly will be a yard behind them down stream, and the disappointment thus caused will be apt to scare them to such a degree that they will not rise again.

That fish are thus caught I do not deny, but I maintain that many more are caught by adopting the down and across cast.

Figs. 5 and 6 are diagrams representing the two slovenly casts I have before alluded to. In both diagrams B C shows

where the fly should be cast, and B D where it should not be cast ; in fig. 5 the line assumes the shape of a corkscrew, and in fig. 6 it is thrown all of a heap in the water, and it will be seen that the fly cannot be got to work properly until it has reached mid-stream, B E, thus losing the chance of catching the rising fish in half the pool.

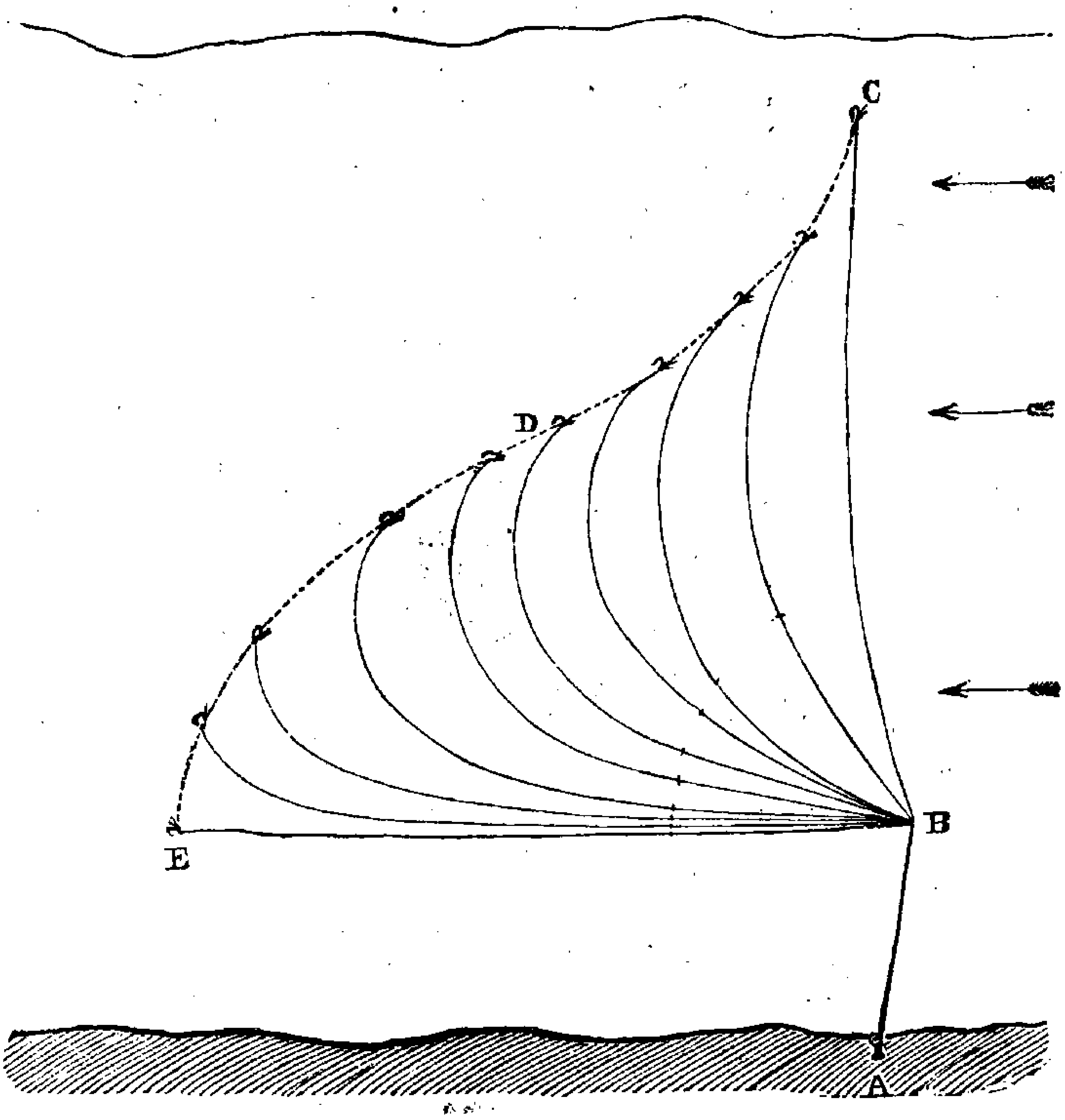


FIG. 4.

I am aware it will be impossible for anyone to follow my directions to the letter, particularly, as is often the case, if there is a foul wind all that can be done is to adhere to them as nearly as circumstances will permit, and to endeavour always to cast the fly in such a manner that the fish can see it before

he sees the casting line. I believe the principle is a sound one, and will guarantee no one is misled by adopting it. I should have mentioned that the fly should begin to 'fish' directly it touches the water, and to insure this a foot may be taken in with the hand through the rings when the forward cast

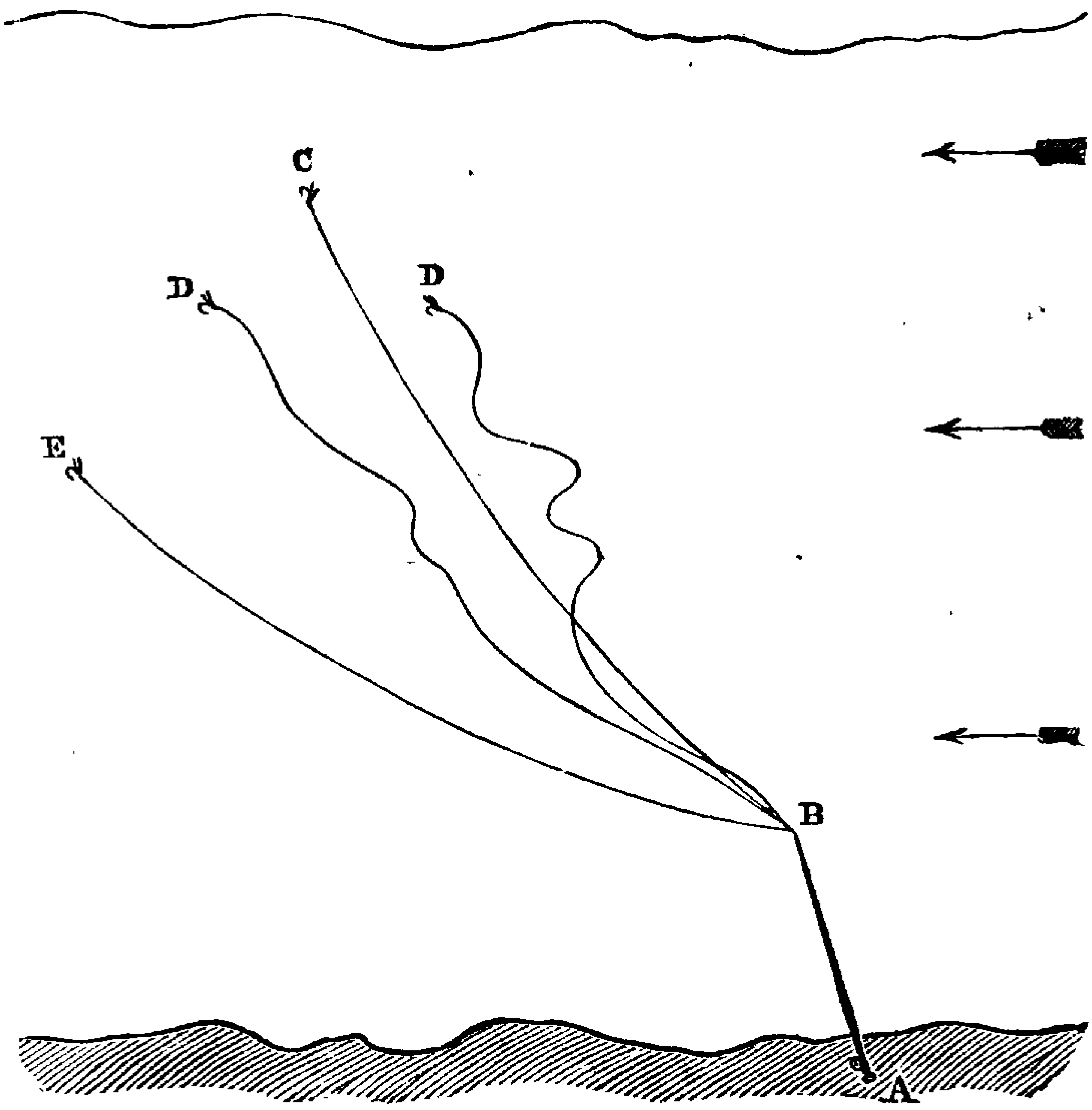


FIG. 5.

is made, which will have the effect of straightening the line in case it has become slack, when the fly will begin to work at once.

When a beginner has perfected himself in overhand casting he may then begin his lessons in casting underhand, which it is quite necessary he should learn, as he will find himself occa-

sionally having to fish streams where if he cannot make an underhand cast he may as well go home.

Of all the various undercasts, the one as practised on the Spey is the most pleasant and satisfactory to make, and, as far as I can judge, a longer line can be got out with it than with

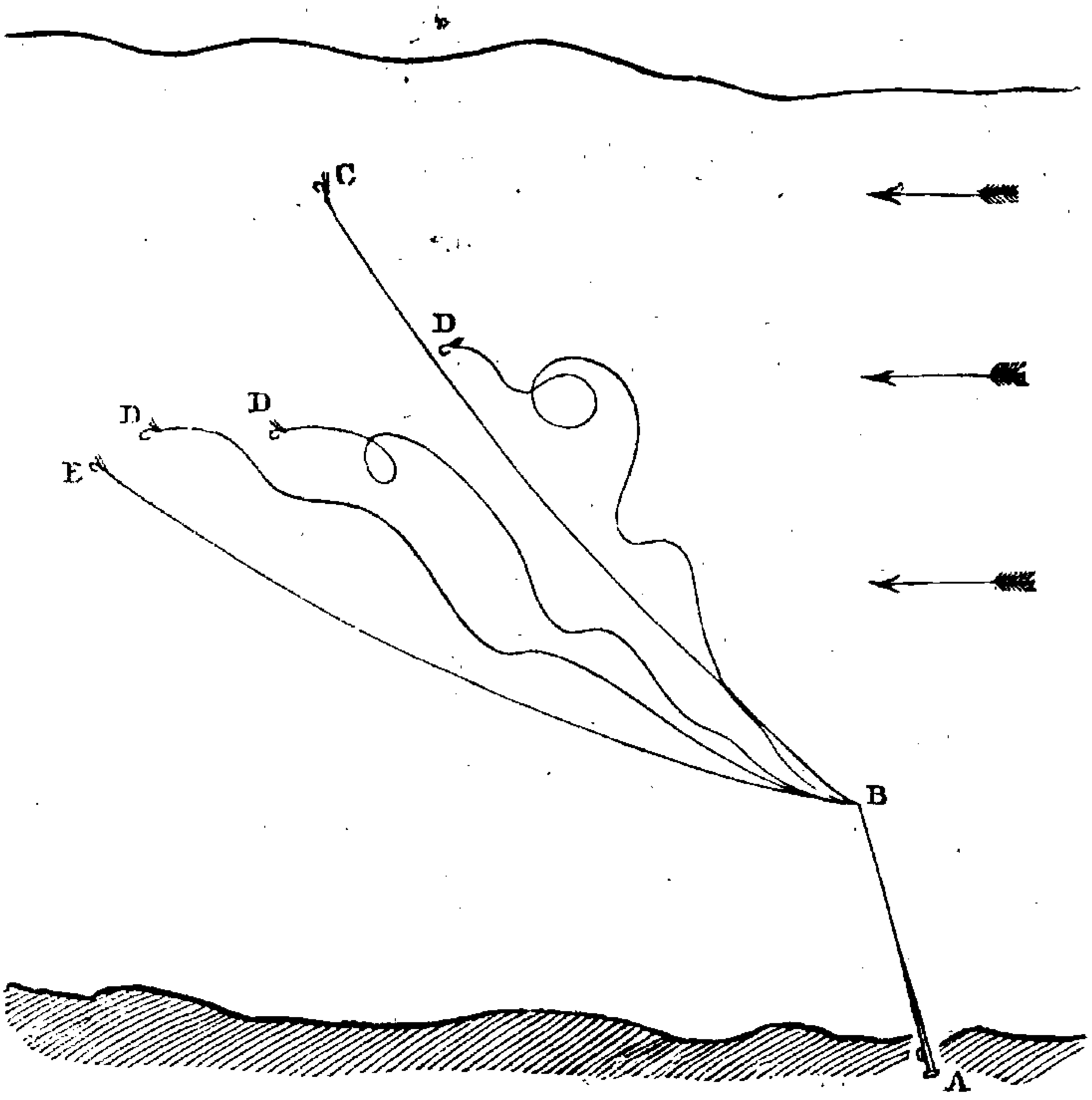


FIG. 6.

any other. It is generally believed this cast can only be accomplished when wading, but if anyone knows how to do it, it can be done with quite as great ease and to as great perfection, when standing on the bank ; but in the latter case it requires a sharp stream to be running evenly close into the bank which is being fished from. Until very recently I found

I could not accomplish this cast from a bank, as in making a cast in the ordinary position the line would invariably come in contact with the bank, and the result was very often the loss of my fly and casting line (see fig. 7). I, however, found out afterwards, that if instead of standing in the ordinary position

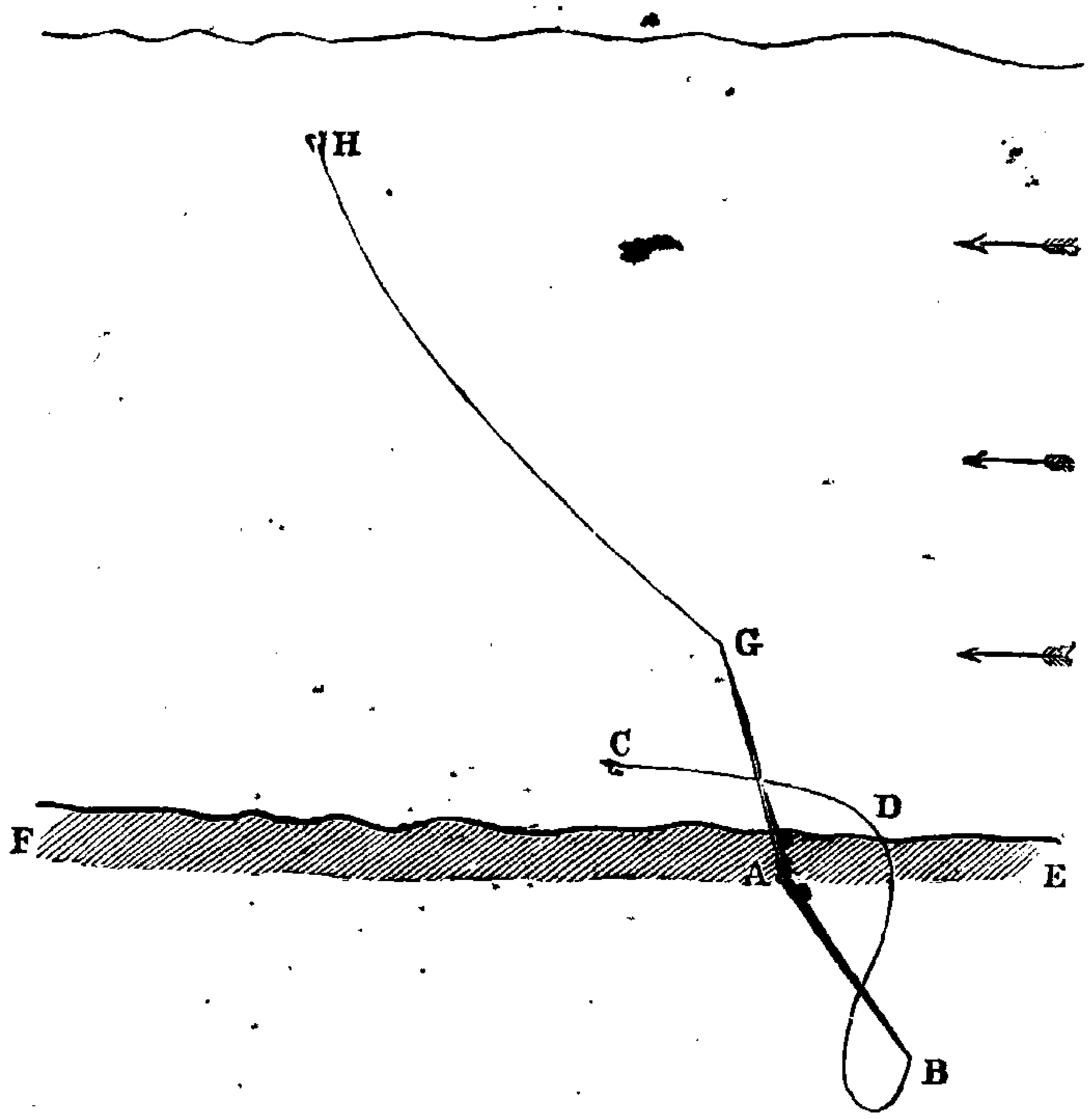


FIG. 7.

F E, river bank; A, where angler stands holding rod, fishing right-handed, in ordinary position for casting facing stream; A B D C, position of rod, line, and fly before making forward cast; D, where fly or line comes in contact with bank; A G H, position of rod, line, and fly when cast is made.

facing the stream, I made say, in military parlance, a right or left about three-quarter face, down stream when making my cast, almost with my back to the stream (see fig. 8), I could keep the fly clear of the bank, and get out as long a line as I

could when wading. One of the longest underhand casts I ever made was when fishing from a bank in that position, and I have found it so useful that I recommend those who may not know it to give it a trial.

To make a Spey cast successfully, the line should be allowed to be carried well down the stream, straight and tight to its fullest extent, the point of the rod following the direction of the

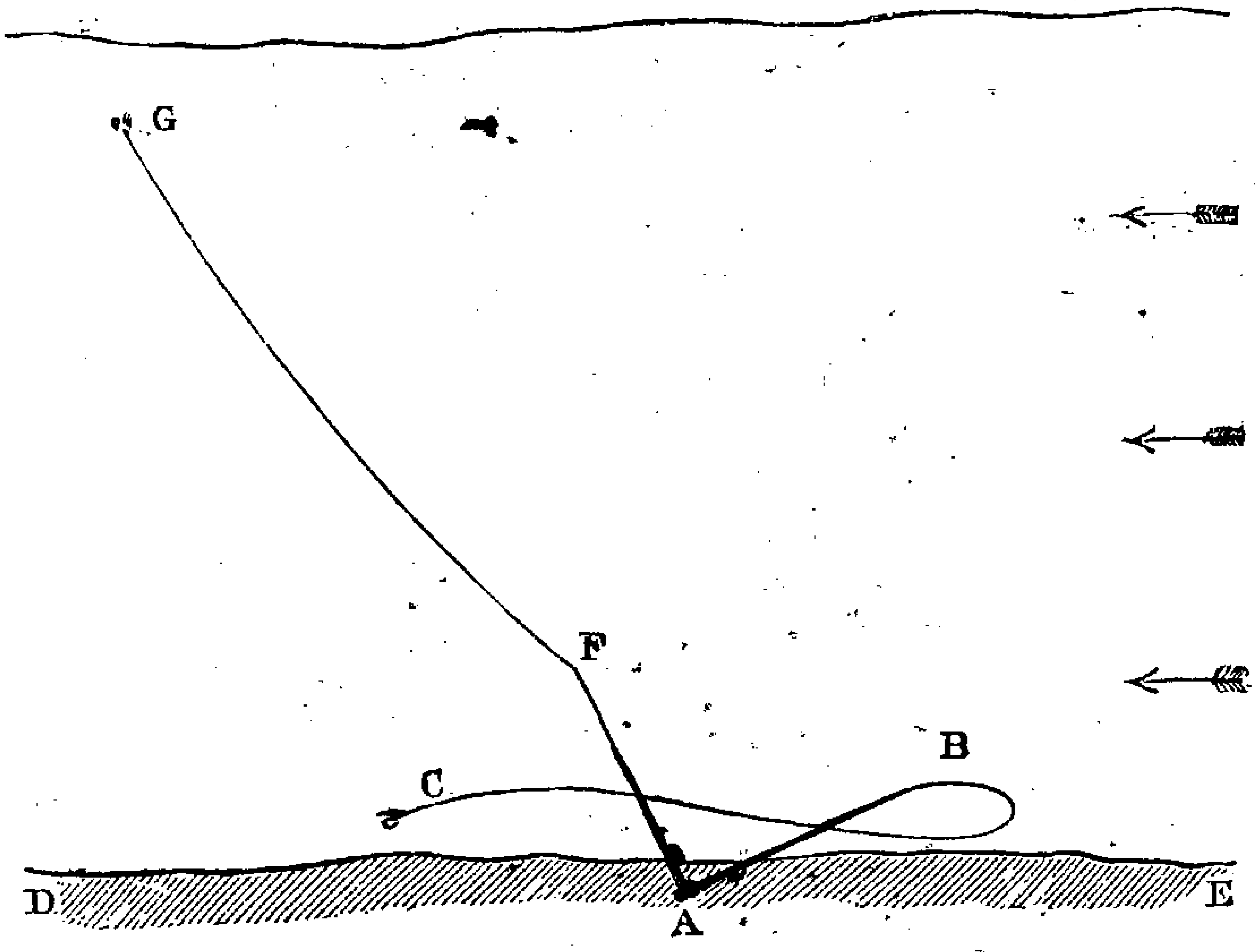


FIG. 8.

D E, river bank; A, where angler stands holding rod, faced left about three-quarters from ordinary casting position; A B C, position of rod, line, and fly before making forward cast, keeping line clear of the bank· A F G, position of rod and line after the cast is made.

fly and held very low. Before making the cast the whole line should be lifted clear of the water. If it is allowed to drag under the surface of the water the cast cannot be made. A rod with a powerful top must be used, and one which has great lifting power. The Spey fishermen, who I think are the finest underhand casters in the world, use rods made especially for the

purpose. The upper portion, instead of being straight, is made in a curve, and, when fishing, the curve faces the stream, which gives a rod made in this fashion a greater lifting power than an ordinary one, but I have always found I could make as good a cast with the latter.

I have made these few remarks upon the 'Spey cast' as it is my favourite, although I find other methods useful at times. To learn how to cast underhand can only be acquired by practice, and in the course of an angler's experience he will have every opportunity of becoming proficient in this branch of the art.

HOW TO WORK A FLY.

There are differences of opinion as to how a fly should be worked. Some fishermen shake their rod so as to make it saw the water, as it were, but this method adds greatly to the fatigue of fishing, and is, moreover, in my opinion, labour in vain. I watched upon one occasion a man working his rod in this fashion. He had out a pretty long line, and when his fly came round close to the bank where I was standing I could see what the effect was. I was rather surprised to see there was no motion given to the fly more than that which was caused by the action of the stream. The fact was the action of the point of the rod did not affect the line at the distance at which the fly was working. I have no doubt that when fishing with a short length of line, shaking the point of the rod would give the desired motion to the fly, although I maintain that in a stream it is quite unnecessary to work a fly at all, the action of the water being quite sufficient to give it a lifelike appearance.

I learnt a lesson when fishing with a cross line where flies are sometimes almost stationary, and I feel certain anyone who has seen the glorious rises which salmon make at flies on a cross line would never think it necessary to work or shake his fly.

The method of working the fly in this fashion is generally adopted by all professionals and many amateurs on the Irish

rivers, and a stranger who does not conform to their ideas in this, as well as in the choice of flies, is put down as a 'duffer.' The first time I wetted my line in the Shannon I worked the fly in my own way, hardly moving the point of the rod. The man in the stern of the boat watched me for a few minutes with disgust written on his face; at last he sprang up, and before I knew what he was about, snatched the rod out of my hand, saying, 'This is the way we fish in the Shannon, your honour,' and then began to show me the see-saw method. I was rather taken aback, as I fancied I knew how to do it before the man was born. However, I had my own way, had very good sport, and heard no more about it from my friend in the stern of the boat.

The most deadly method of fishing is to hold the point of the rod well down, letting the fly sink as deep as possible. If the fly is worked at all it should be in dead sluggish water, and then only by a very slow 'up-and-down' motion of the top of the rod.

But there is no accounting for the way a salmon will sometimes take a fly.

A short time ago, when fishing the Usk, a friend of mine put down his rod on the bank to go and talk to his wife. The fly was left in the water, and when he returned he found to his surprise a fish was on, and after an exciting struggle he landed him; he had been fishing that pool for hours before this happened.

HOW TO FISH A POOL.

The proper way to fish a pool is to commence at the head, moving down stream about one yard, or step, before each fresh cast, always taking care the old cast is completed before the downward step is made. This is of greater importance than might perhaps appear, for if the new cast is made first and the downward step taken afterwards, it will make all the difference in the working of the fly. The latter will have to travel all of

a heap for yards before it begins to fish, the disadvantages of which I have already stated. I have seen many salmon fishermen having taken a downward step and made their cast, take one or two more steps forward, without being apparently aware of it. This is one instance of the bad habits a young fisherman may get into, and which he may never be able to break himself of. These are small things in themselves, but, nevertheless, are apt to mar his sport to a degree he is quite unaware of.

When a fish rises to a fly, it is best to wait about thirty seconds before throwing over him again, and the angler should remain stationary and shorten his line a yard or so, by pulling it through the rings of the rod, and not by winding it up with the reel. He should then commence throwing over the fish again with the shortened line, letting out the slack until the exact length is cast which rose the fish. If he does not rise him again, a smaller fly may be tried of the same pattern, and, if needs be, one of another pattern. If this should prove unsuccessful, the fish may be left alone for a quarter of an hour or twenty minutes, the angler continuing to fish the pool down and returning to try his luck again in about that time. He should first, however, in case he is fishing from a bank, make a mark with his heel on the spot where he stood when the fish rose, or, if wading, take some bearings by which he may recover the place where he was standing. He should then try the fly that rose the fish in the first instance, and if he is not successful after one change, he may leave the fish for good.

If, when fishing a pool, several fish rise, but the majority of them are only pricked and not hooked, it may be taken for granted the fly is too large, and the pool should be fished over again with a smaller one. It may be that the colour of the fly is not suitable to the state of the sky, or that it is too easily seen, and has made the fish somewhat shy. If this should be the opinion of the angler, he can change his fly for one of another colour. This is, however, all guess-work, and nothing but long experience will be able to give any aid under such circumstances.

STRIKING A RISING SALMON.

There are different methods adopted for striking a salmon. A great many experienced anglers advocate striking or hitting a rising fish 'from the winch,' without the line being touched. Others say it is necessary to strike with the line held tight between hand and rod. Others, that if the line be held tight between hand and rod, a fish will hook himself without striking; and this latter is decidedly my way of thinking, and I am convinced that striking is a mistake. The question of striking or not striking is of the greatest importance, and I will therefore endeavour to explain the *pros* and *cons* of each system.

Striking from the winch has many advocates. The advantage claimed for it is that, with a properly constructed reel, a salmon can be hooked before the reel plate revolves, but that it will revolve before the fish turns. This may be so, but I cannot understand how the point of the hook, particularly if it is a big one, can be forced over the barb unless the line is held tight, or the winch a very stiff one, a very unpleasant thing to use, and involving the utmost danger in playing a lightly hooked fish. My belief is, that in the case of any salmon struck from the winch, in whose mouth a hook has been found fixed over the barb, the result is due to the pulling and dragging he gets when being played, and which must, sooner or later, have this effect. If an easy running reel be used, which is in my opinion the proper one, the reel plate will revolve the moment the line is tightened in a fish, and, if the line be not held tight, the barb cannot get fixed, unless the hook is a very small one. These remarks are equally applicable to single and to double hooks.

Long before the question as to the advantage of striking from the winch when using double hooks was discussed in the sporting press, I had given the double-hook plan an extended trial, but I lost so many fish with them, that I gave them up. I did not strike from the winch, and I am told by advocates of

this system that my not doing so was the cause of my want of success. They may be right, but I cannot agree with them, and I am convinced that striking a fish, in any form, is a mistake.

Many fishermen advocate striking with the line held tight; this is accomplished by a sudden upward jerk of the point of the rod the moment the fish is seen to rise, or that it is felt that he has taken the fly; this is in my opinion the worst possible method, and a very risky one, although it is the one generally adopted. I think the habit has been acquired in consequence of the majority of salmon fishermen having fished for trout in their younger days, before they were allowed to handle a salmon rod. Fishing for trout and grayling and fishing for salmon are two very different arts; the former are far quicker than a salmon in their action when rising to a fly, and require great dexterity to hook them, but even they do not require to be what is called 'struck' at in the sense that is meant in striking a salmon; and a slight turn of the wrist, which may be called a strike if it pleases anyone to do so, is all that is required to fix the barb of a trout fly. If the rod was suddenly jerked up, as when striking a salmon, the chances are, with a heavy trout, the casting line would break, and perhaps the rod into the bargain. I am inclined to the belief that striking from the winch would suit trout fishing better than salmon fishing. The evil arising from striking at a rising fish with the line held tight, is that there is great risk, owing to the sudden jerk of the rod, of either smashing the top or leaving the fly in the fish's mouth, or should the fly be suddenly snatched away from him in the act of rising, the disappointment would most likely scare him to such a degree that he would not rise a second time. I have been told that it is necessary to strike at a salmon in order to prevent him from ejecting the fly; I have already stated my opinion regarding the power of a salmon of ejecting his food. It is only natural he should do so on finding that it was not natural food, but I have myself seen many salmon come at my fly with open mouth, and in such cases striking at him would be most likely to defeat the object in view, and the chances of

hooking him would be far greater if he were allowed time to close his mouth on the fly. It is highly probable that whether he is struck at or not, he often succeeds in ejecting a fly without being touched, having found out the trick that has been played upon him, and it is for this reason that many salmon which have been risen, cannot be tempted to rise a second time. What is desired when a salmon rises is to fix the barb of the hook, and to effect this the surest and safest way, in my opinion, is by adopting the following method: When a fish rises at the fly the rod must be held steady in the same position as before the fish rose; if he has taken the fly he will hook himself by his own weight on his downward course after the rise, and he will soon let you know it. Nothing more is required to fix the barb of the hook unless the fly used is of a large size, when, to make certain of doing so, it may be advisable to give one or two steady 'pulls,' the force of which must be left to the angler's discretion; if the barb is not then fixed it will be in consequence of the point of the hook coming into contact with a bone, when striking or pulling would be of no avail. If, after a salmon has risen it is found he has not taken the fly, the rod should still be held in the same position, and the fly allowed to work as if nothing had happened. By adopting this plan there will be a far greater chance of his rising a second time than if the fly had been snatched away from him; and I have often seen fish that have risen at my fly and not taken it, follow it and make two or three rises at it before the cast is completed, but I do not often remember to have caught a fish following the fly in this fashion. I think it is a sure sign that the fly is too big, and I should much prefer his going back to his corner after the first rise, and giving me a chance of changing my fly. I have also observed that a fish that follows the fly will seldom be seen again. He finds himself before he is aware of it in shallow water, and the chances are he gets scared; this is the only drawback (if it can be called so) that I can suggest to my plan of hooking a rising salmon, and I will now leave it to my readers to form their own opinion on this very important question.

PLAYING A SALMON.

Of all the delights of an angler's experience, there is nothing to compare with that of 'rising' and hooking a salmon.

The rise of a big salmon to your fly is electrifying in its effect. There is a moment of intense uncertainty and suspense as he disappears after having risen, and you are awaiting the result. . . . He has missed it! Your face is as pale as death, and you sit down unable to stand from sheer excitement. You have to wait a minute or two before you make another cast. All cares and troubles, all thoughts of everything and everybody, even of the wife of your bosom, are cast to the winds during those glorious moments of uncertainty; your whole soul is bound up for the time being with the silvery monster you have roused from his stronghold. Perhaps the idea comes across you that your fly is too big, and with trembling hands you change it for a smaller one. Watch in hand, with an impatient longing to be at him again, you wait till the allotted time has elapsed. 'Time is up,' and you rise to again try your luck. You may be an old hand, and no outward sign will betray the beating of your heart, as you proceed to cast over your fish with the same unerring precision as before, as if apparently nothing had happened, and you were only commencing to fish the pool. Or perhaps the excitement will be too much for you, and trembling from head to foot—scarcely able to hold your rod—you will make your cast, but *how* you will never remember. With eager eyes starting almost out of their sockets, you watch the progress of your fly as it comes nearer and nearer to where you rose your fish. 'He should come now,' is your mental ejaculation, and quick almost as the thought a swirl or perhaps a scarcely perceptible wave in the water will betray the presence of your prey. One more moment of intense uncertainty and suspense; you feel a slight pull, then your line tightens, your fly of your own making, in which you took such pride, has done it; 'you are in him!' A thrill of

exultation and joy runs through your veins as those magic words escape your lips. . . .

The foregoing description, however uneloquent, may give those who have never experienced it a faint idea of what every lover of the sport feels on rising and hooking a salmon.

Anglers I have heard of who even consider that when once they have hooked their fish, the sport is over, and hand the rod to their attendant to play and land the fish; but I prefer as long an acquaintance with my salmon as he will vouchsafe me, and nothing would ever induce me to give up the rod to anyone to play a fish if I could avoid it; besides, there is the finish to look forward to. The few moments of uncertainty just before the fish is being gaffed or landed—particularly if he should be a heavy one, perhaps the biggest you have ever hooked—are most exciting; and the fishermen who forego this part of the performance, lose, I cannot but think, a good deal of the pleasure of the sport. There is also a great risk in handing over the rod to an attendant; in the act of doing so, the line must necessarily get slack, and, should the point of the hook be only skin deep in the fish, as is often the case, ten to one that the angler and fish will part company. Is there a salmon fisherman of any experience who has not often seen his fly drop out of a fish's mouth, the moment he was gaffed or landed, when the point of his rod was lowered and the line slackened? It might probably not occur to him to ask himself the reason why the fly had dropped out; but if it did, the fact would tell its own tale, and he would be made aware that if for one moment he had given the fish a slack line, he would never have been brought to bank.

If a fish is well hooked, no harm can come by the rod changing hands; the angler has often to scramble up a steep bank when playing his fish, in order to enable him to follow him, should he have taken a run up or down stream, in which case he will have to hand his rod over for the time being to his attendant; but, as it is impossible to tell whether a fish is firmly hooked or not, the rod should never change hands if it

can be avoided. To keep a tight line from first to last is a golden rule that should be always borne in mind by every salmon fisherman when playing his fish. He should hold the point of his rod well up, and keep it opposite to him if he can. Should the fish take a run, ending with a leap in the air, he must instantly lower the point of his rod, which ought to defeat this effort to rid himself of the fly—the object doubtless intended.

In lowering the point of the rod, a slack line must necessarily be given; but it is a case of kill or cure: if he is well hooked, he will be brought to bank; if lightly hooked, the chances are against it. It is the 'glorious uncertainty' that adds to the pleasure and excitement of the sport. If it was a certainty, there would be none.

In playing a salmon, the amount of strain necessary to be put on the line must be left to the judgment of the angler, and should be proportionate to the strength of his tackle. It is not generally known what amount of strain a rod can put on. I may therefore mention that, in trying the experiment with a very powerful rod, all I could do was to pull four pounds on my steelyard, which, at first sight, seems very little; and, if a salmon remained stationary when being played, and the angler were merely pulling dead against him, with a fairly strong casting line, I do not think he could break it, do what he could, unless he gave it a sudden jerk; but, the moment the salmon began to move and pull as well as the angler, a double strain would be put on the line, and it would probably break, unless of unusual strength.

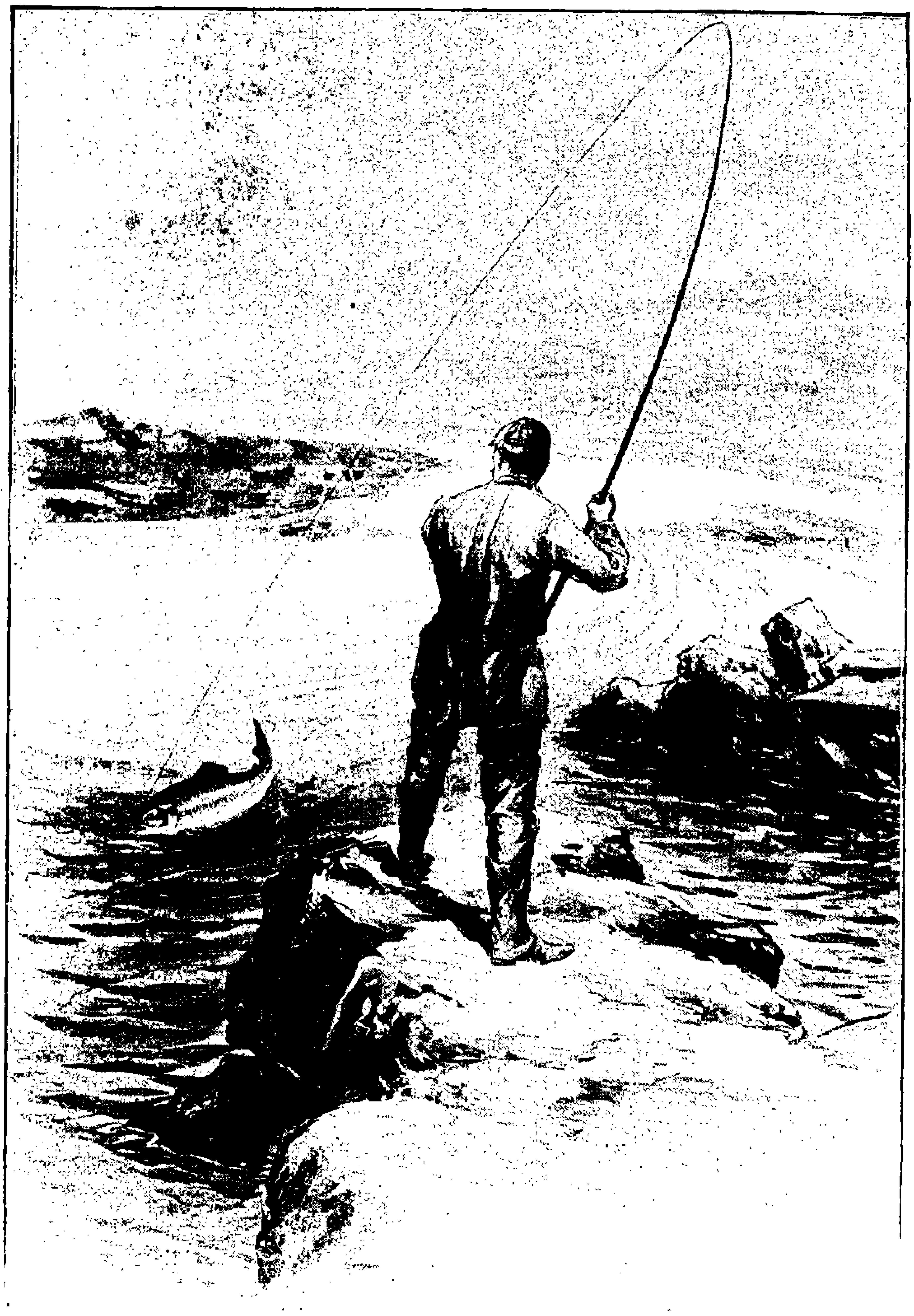
The foregoing may be of some use as a guide to the amount of strain to be used in playing a fish. If skilfully handled, he will generally be brought to the gaff in from five minutes to half an hour from the time he is hooked. It is not often he will take longer to kill, unless he is hooked foul, when he may keep on for hours. I myself hooked a salmon on the Kirkcudbrightshire Dee about ten o'clock one morning, below the weir at Tongueland, and he kept me the whole day playing him in

the same pool—a deep hole above a fall, with a sunken rock in mid-stream. He got fast in this rock twice during the day, and I had the good fortune (being able to see what I was about) to free the line; but when it got dark and I could not see, I sent for a lantern; meanwhile, my fish got fast again in the rock, and broke me; he gave my attendant one chance of gaffing him, but he missed it, and he never gave another. The fish was plainly seen by the spectators, and he was judged to be a red male fish of about forty pounds. He was hooked under the chin. I put the utmost strain on the line my rod was capable of during the whole day, but he did not show any signs of giving in, and might have kept me all the night. I could not pull him down stream owing to the fall, or it was possible I might have killed him in ten minutes; he sulked the whole day, and never ran out a yard of line. I should like to have had him on the bank, but, to tell the truth, I was not sorry to part company with him, as I should have felt in honour bound to hold on as long as I was able, which would not have been very pleasant, as it was a cold night in the month of October, and he was hardly worth the trouble. But to return to my subject. If there is plenty of room, and no danger of being broken owing to sunken rocks, roots of trees, snags, &c. &c., it will be as well to put only a moderate strain on the line, and to let the fish run out as he feels inclined; but there are occasions when it is necessary to hold on at any cost, and not to give an inch of line if it can be avoided. It is astonishing how easily a fish can be cowed in this manner. On a river in the south of Norway that I was fishing with a friend there was a narrow rapid stream, in which salmon congregated in large numbers, waiting to take the falls just above, where it was a certainty to rise or hook a fish. We fished from a high rock overhanging the stream, and there was only one place where a fish could be landed, which was a backwater, about the size of a large dinner table, on the side we fished from. Directly a fish was hooked, it was a case of pull baker, pull devil, and we tried to haul him into this bit of slack water; and, if we once

succeeded in getting him there, he seemed to lose heart, and gave in at once. I dare say I shall not be believed; but the average time we took to kill any fish we landed in this pool was about four minutes. A fish over fifteen pounds would generally beat us, for, do all we could, we could not pull him into the slack water. If once he got into the rapid below, down he went, and, not being able to follow him, he invariably broke us. We had to resort to these tactics in most of the other pools in the river we were fishing, but this was the most difficult of all to land a fish in. These are, of course, exceptions to the orthodox methods of playing a fish; but they show what can be done with good single gut, which was what we used.

If a heavy fish is hooked, and makes a run down stream, then suddenly takes up again, it will test the qualities of the strongest casting line; the strain on the belly of the line thus made will in all probability, if the line used is a continuous thick one, be fatal; and it is under such circumstances that the advantage of using a thin back line will be found out and appreciated, the strain on the thin line being so much less in proportion. If, however, any line stands such a test, there is still great danger: for, should the fish take it into his head to come down stream again, the line cannot be reeled in quickly enough, and the slack will get fast in any stones, rocks, or snags that may be at the bottom of the river. If the angler is playing the fish from the bank, he will have little hope of saving it under such circumstances; but, should he be fishing out of a boat, the chances are far greater against him, as he cannot follow the fish, and is utterly powerless to help himself; all he can do is to get in the slack line as fast as he can, and, this being a very slow process, reeling in with the rod in hand, the best thing he can do is to put down the rod in the boat, pull in the slack with both hands, and trust to luck to secure his fish.

When playing a salmon from the bank, should the fish prove more than ordinarily stubborn, and show no signs of giving in, it is a good plan, if it is practicable, to coax him up stream as



GAME TO THE LAST

far as is possible and then pull him down with a run; if this can be repeated two or three times, he will generally give in.

There is another way of playing a fish that is stubborn: the rod is laid down on the bank, and the fish is hand-played, and, although it does not seem a very sportsmanlike method of proceeding, it is astonishing how quickly a fish will give in when thus treated. I have seen fish that have been played half an hour, showing no signs of giving in, landed in a couple of minutes by hand-playing them. This is a common practice on the Aberdeenshire Dee, particularly during the spring months, when the spent fish, which run to a large size, get recruited, give the angler a great deal of trouble, and waste a great deal of valuable time in bringing them to bank.

GAFFING AND LANDING A FISH.

There is a great art in bringing a salmon to the gaff. It should never be attempted in very shallow water if it can be avoided. The gaffer should always keep a little below where he expects the fish will be brought towards the bank, and wherever he places himself he should remain stationary, in a stooping position, with the gaff ready for action. Should he move about the fish will probably get sight of him, and if he does the chances are he will make a run out into mid-stream, and will not allow himself to be brought within reach of the gaff until he is quite exhausted, fighting it out to the bitter end. What the angler has to do is to wait until the fish is quiet, and if he can get his nose above the water bring him in with a run to the gaffer, who will seize the opportunity, give one clip, and all is over with him. On no account should he attempt to put the gaff in should the fish commence to struggle, but wait patiently until he is quiet again. A fish will often be brought within reach of the gaff over and over again, and just as the gaffer is about to strike him he commences to struggle. This is a trying time for the man who is playing him, but he must not, as is often the case, lose his temper and abuse the gaffer, for

if the latter is of a nervous temperament he will probably make a bungle of the business, and the fish will reap the benefit. It may be taken for granted that the gaffer is as keen and as anxious as the angler to see the fish on the bank, and does his best to secure him for his own reputation's sake. Should he miss a chance and the fish get away, it is doubtless very annoying, but it is one of the disappointments the salmon fisher will have to put up with.

There are few men who can gaff a fish as it should be done. It requires great nerve and a great deal of practice. The Norwegians are the best gaffers I ever came across, with the exception of the Shannon men, whose dexterity is wonderful. To gaff a fish in deep rapid water is a more difficult thing than it appears to be, yet the Shannon men never miss a chance; they use a gaff made of well-seasoned hazel wood, that will give and take with the struggles of the fish, which run to an immense size. A stiff handle to a gaff would be liable to break when gaffing one of these monsters in a rapid stream, besides being most unwieldy. An inexperienced gaffer will generally gaff a fish anywhere he can put his gaff in, but an experienced man will bide his time and gaff the fish somewhere below the back fin, which will balance him as nearly as possible, and prevent his flesh being torn in his struggles. In landing a fish with the net similar precautions must be taken; the man who has charge of the net should remain stationary where he thinks it probable the fish may be landed. The net should be held under water with a stone in it, which will keep the meshes in their place. The angler must run the fish in towards the net in the same manner that he would when the fish was to be gaffed. If the fish is quiet he will generally be able to run him in at once, but should never attempt to do so if he commences to struggle. When the head and shoulders of the fish are well into the net, the netter should raise it sufficiently to get the whole of the body within its meshes; the hoop of the net should be then lowered, the farther end downward, and the handle at the same time raised—thus forming the net into a purse from which there is no escape. The

fish can then be drawn into the bank, net and handle in the same position. On no account must the net be raised high out of the water; if it is attempted to land fish in such a fashion the weight of the fish will soon tell on the hoop of the net and make it unfit for use. It must never be attempted to net a fish tail first; he may be got into the net, but he has an awkward habit of using his tail, and would be out of it again before you were aware. When once, however, his head and shoulders are in over the hoop he cannot escape.

Many fishermen gaff their own fish, and will not on any account delegate this office to anyone else. To accept aid would deprive them of half their pleasure in fishing, and if they are of this opinion I think they are quite right; no doubt there is much excitement in gaffing one's own fish, but it requires great skill and practice to be able to do it artistically. There is, however, a certain amount of risk incurred, as when the line is wound up so short as it necessarily must be to enable the angler to reach his fish, if care is not taken to lower the point of the rod and slack the line the moment the gaff is in, the chances are the top will get smashed. This has happened to myself on several occasions, and the object being to get the fish safe on the bank, I prefer adopting the surer method of having my fish gaffed by my attendant.

If it can be ascertained for a certainty that a fish is firmly hooked, and there is a beach anywhere handy, he can be stranded without the use of gaff or net, but this must not be attempted until the fish is quite 'done' and has not a kick in him. The angler must wait until he can get his head above water, and he can then run him in high and dry without a struggle. If he cannot completely 'strand him' thus, he can put down his rod and tail him; this is done by grasping him firmly just above his tail with the second finger and thumb. By this means he can be pulled out of the water without risk of escape, and carried to a place of safety; but it is only salmon that can be landed in this way; the tails of all other fish, sea trout included, would slip through the fingers, and this is an

infallible test should it be doubtful if the fish caught is a salmon or a sea trout.

Salmon fishing out of a boat in a lake should be carried on on the same principle as when fishing on the river bank, with the exception that a drop fly may be used in addition to the tail fly. A drop fly is often used on a river, but I think it is objectionable in consequence of the risk of its getting foul at the bottom.

MISCELLANEOUS.

There is no accounting for the humour of a salmon. You do not know the minute he will take it into his head to rise; he will rise freely sometimes on the worst possible looking day for fishing, when no sport is expected. The appearance of a day is most deceptive. You may go out full of hope and certain in your own mind you are going to have great sport, and you will often go home blank without a rise; but although as a rule it is impossible to foretell in the morning what sort of fishing day it will turn out, there is an exception. If the wind is in the east with a blue hazy atmosphere it seems to affect the fish in some unaccountable way, and while it lasts a rise can rarely be got out of them. I have noticed this hundreds of times, often when the water was in splendid fishing order, and the river full of new run fish, but whatever quarter the wind blows from there is always a chance while the fly is in the water, and to insure success the angler must make up his mind to have many blank days. He must never tire of throwing his fly, and never be put out by failure.

The time of day when I have found salmon take best is between the hours of nine o'clock A.M. and one o'clock P.M., and from four to dusk in the evening. In early spring if there is no frost it will make little difference what hour one fishes, but in a hard frost it is not often a salmon will rise until the afternoon, and then only for a short time. In the latter part of the spring months, when the weather gets bright and hot, the earlier the

angler is out the better, but if the sky is overcast I should prefer the hours I before mentioned for choice. I have frequently known early risers to have flogged all the pools over all the morning blank, and the man who appeared on the scene at nine or ten o'clock to get sport in those same pools. Salmon will often only rise at certain times of the day, and it is luck to come across them when in the humour. There is one time of the evening, however, when I should never despair of catching a fish if I had been blank all day. The time is about a quarter of an hour after sunset, after a hot bright day in the spring months, when the glare is off the water. There was a pool on the Kilmurry water, on the Blackwater, county Cork, that hardly ever failed me under such circumstances; it was a sharp running water, as smooth as glass, and a very good rising pool at any hour of the day. When there was no wind, I used to commence fishing at sunset, but although I had fished the pool once, twice, or three times, I never could rise a fish until about a quarter of an hour afterwards. It was then a certainty, but the fish were only on the rise for about twenty minutes, and there was seldom time to catch more than one fish. This was the only pool they seemed to care about rising in at this hour, and the less wind there was the more certain I was to get a fish.

When fishing private water the angler can choose his own time for beginning operations, and will have the satisfaction of knowing that his fly will be the first one seen by the fish in the morning, but when fishing in club or open water those that go out late will be considerably handicapped, and will very often have to travel a long way to secure a pool.

A club or open water is a very good school for a beginner to commence his salmon-fishing education. Here he will find plenty of competitors, and he will have a far better chance of acquiring knowledge than if he were fishing in private water, with no one but perhaps an inexperienced prejudiced person as an attendant to advise him. In an open water he will come across old and experienced anglers who, although they cannot be expected to give him information that would mar their own

sport, will be found as a rule ready to offer him good advice if he will take it; and he may soon learn the rudiments of the art. He will have many opportunities of losing his temper, and will find out that the best thing he can do is to keep it. Fishing in club or open water is a series of 'sells' from morning to night; all sorts of dodges are resorted to to attain the desired end, 'Sport for self.' I am reminded of the first sentence in the daily prayer of a certain Scotchman, which ran as follows: 'Gude Lord, tak' *every* thing awa' frae *every* mon, and gie it a' to me;' and this is what many salmon fishermen feel in their hearts as far as sport is concerned. I am happy to say, however, that such 'fish grabbers' are exceptions. A salmon fisherman, as a rule, is always good company and a jovial fellow; he is always ready to give a helping hand to a brother fisherman, and however much his temper may have been tried during the day it is generally all over at dinner-time, and by the time he goes to bed after a convivial glass or two with his friendly rivals, he has quite forgotten his ill-luck, determined to be up and doing next day. About two years ago I was very cleverly done out of a good pool when fishing in a club water. In consequence of the early risers being in the habit of fishing all the pools over every morning before the hour when reasonable men came out, a rule was made that no fishing should commence before eight o'clock; consequently the early risers were always on the water long before this time waiting at their favourite pools, watch in hand, ready to commence operations the moment the clock struck.

Not being an early riser, I drove down one morning on the left bank of the river to where there were three celebrated pools almost running into each other, and one of which I hoped to secure. The road I travelled came all of a sudden in sight of the two upper pools, lying nearly parallel to them at a short distance off; these were fished from the left bank, but the lowest of the three pools was fished from the right bank, and the river had to be crossed at the tail of the middle pool, in a boat, to be able to get at it.

I saw that the upper pool was occupied, and, as I thought, the middle pool also, as I saw a fisherman sitting down on the bank reading a newspaper and apparently resting himself after his labours. I passed down to opposite the lowest pool (which was also close to the road, but hidden from the two upper pools by an orchard) to see if it was occupied, and I saw what I took to be an angler with his fly stuck in a tree on the opposite bank, and the river watchers trying to free the line. I of course took it for granted that the pool was occupied, and passed on to look for a vacant pool lower down, and it was not until afterwards that I found out the trick that had been played upon me. The fact was that the man who was reading the paper on the bank at the middle pool, had been fishing it since eight o'clock blank, and as the lowest pool was a very good one, he thought it just possible he could go and fish it and return to the middle pool (which was by far the best in that part of the water) before any other fisherman appeared on the scene. So he went over in the boat, and while in the act of fishing the pool his fly got fast in the tree. 'Oh, horror! what shall I do? the Major will take my pet pool before I can get back, and I shall be left out in the cold.' However, a plan of action soon suggested itself, and he left his attendant with the rod, crossed back in the boat and adopted the *ruse* I have mentioned, of reading the newspaper in full sight of anyone who was driving on the road, making it appear he was *bonâ fide* in possession of the pool. The thing was so cleverly done that I could not be angry, although the laugh was against me.

There is as much luck in salmon fishing as in any other pursuit we are engaged in, and the most experienced angler will often be beaten by the veriest tyro. It is very trying to the temper of a man who 'fancies himself,' and who is going to teach all the world how to fish, to go home blank. The man who is lucky has no feeling of pity for his neighbour who has been unsuccessful, and, if the truth is known, often chuckles at his discomfiture, even though he should be his bosom friend. Not long ago I was fishing some private water I had rented

with a friend. We used to meet at lunch to compare notes. One day when we met as usual, my friend produced five splendid new run fish, one of them over 20 lbs., and I had nothing to show. I could see that he had no pity for me, and that he was highly pleased with himself, and although I pretended that I rejoiced with him, I was in reality not at all happy and felt very small. This was bad enough, but when, on our separating to resume our sport after lunch, he said to me, 'Well, as you are not getting any sport perhaps you would like to read the newspaper (handing me one), instead of fishing this afternoon,' it was almost more than I could stand. However, I declined with thanks and said nothing more, but I hated him for half an hour most cordially, and vowed I would pay him out some day, and shortly afterwards I had an opportunity of doing so, for I produced eight spring fish one day at lunch time, my friend having only landed a kelt; but knowing what his feelings must be, I did not chaff him or offer him a newspaper to read. May my forbearance be chronicled by the recording angel! That day I killed eleven fish, averaging 10 lbs., the best day I ever had spring fishing.

I have seen many strange incidents during my salmon-fishing experience, but the cleverest thing I ever saw done was by the above-mentioned friend. He was fishing a pool in the Blackwater, co. Cork, a short distance above me. All of a sudden I heard shouting, and when I went to see what was the matter, I found that after a long play he had been broken by a big salmon, who took away his fly and about forty yards of his reel line. He had put on another casting line and fly and was fishing the same pool down again when he noticed a fish rising two or three times in a very eccentric manner, and the idea struck him that it was the same fish that had broken him trying to get rid of the fly and line. He was a man of great resource and never at a loss what to do in any case of emergency, so he took off his fly, put on a triangle weighted with a good bit of lead, and casting this over the stream below where he saw the fish rise, and dragging it across, in a little time he succeeded in recover-

ing his line, and the fish being quiet at the moment he was able to pass the end through the rings of his rod, and attach it to what was left on the reel. In a few minutes I had the pleasure of gaffing the fish; he was new run, and weighed 20 lbs. The pool he was fishing was a quarter of a mile long, and very broad, and it was a hundred to one against his recovering the line. On looking round after I had gaffed the fish I missed my attendant, left in charge of my rod, who did not appear on the scene until some time after the fun was over. The fact was he had taken advantage of my back being turned to go into the hut, which was close by, to eat my friend's attendant's share of a very good lunch we had brought with us for an expected visitor. He managed, however, to pick up a very good version of the story, for shortly after we heard all over the garrison of Fermoy how he had been the instigator and prime mover of the whole thing from beginning to end, including the gaffing of the fish.

There are stories of monsters that inhabit the deep holes in the Blackwater, and the following may be amusing:

About twelve years ago a man of the name of Maurice Hallahan was trailing a bait out of a boat at a place called Hallahan's Rock, between Clondulane Weir and Fermoy, where the depth of the hole is supposed to be at least forty feet. He hooked a big fish, and having no one to help him put down the oars and held on to the rod, the fish dragging the boat and man after him down as far as Ballydoroon stream, up again past the Rock as far as Mount Rivers, and back again to the Rock, where after sulking for hours he took up the Funcheon River hard by, when, getting into shallow water, Hallahan put the gaff in him, but the fish was so heavy he could not get him into the boat, and was obliged to let go. The fish in his struggles broke the line, and made a bolt down the Funcheon again to Hallahan's Rock, and was seen no more that year. The year after a gallant Major quartered at Fermoy was fishing the same hole and hooked a big fish, which was gaffed after a long play—Hallahan's gaff still in him, with enough wattling

growing upon it to make a basket to carry him home. The weight of the fish has never been ascertained, and it is justly supposed never will be. I think it right to state that the Major was not the author of the story.

I have made no specific reference in this article to fly fishing for any of the *Salmonidæ* except the true salmon, *Salmo salar*.

Of the two other migratory species, the bull trout, *Salmo eriox*, and the sea or salmon trout, *Salmo trutta*, the former possesses very limited interest for the fly fisher, and in regard to the comparatively few rivers in which it will rise to the artificial fly the general observations which are here offered on salmon fly fishing will be found applicable.

Sea-trout fishing, on the contrary, takes, as a sport, rank next to salmon fishing itself. In many parts of England and Wales, and over most of the districts of Scotland and Ireland, the sea trout, under this or some local name, is known and fished for. As in its relative size—standing in this respect between brown trout and salmon—so in the tackle, flies and rods employed in its capture, the bright gamesome *Salmo trutta* occupies a sort of half-way house between the two species. The most convenient-sized rod, whether for lake or river fishing, will be found to be what is known as a double-handed trout rod, from 13 feet to 16 feet in length, and carrying a reel and line similar to that used for salmon-fishing, but smaller and lighter to suit the shorter and less powerful weapon. As to the mode of using the rod, casting, &c., the instructions given in regard to salmon fishing hold good almost in their entirety, as also those on gaffing, netting, and so forth.

With respect to the flies used, which again stand midway between salmon flies and brown trout flies—ranging from the ordinary sized lake trout fly up to a large grilse or small salmon fly—there can hardly be said to be any generally known or accepted standard patterns. Almost every locality (I might say almost every fisherman) has its own patterns and ideas. The only point in which there can be said to be the smallest approach

to unanimity is in regard to a certain amount of silver or gold tinsel being a desideratum in the construction, or rather decoration, of the bodies, which otherwise may be dressed smooth, with floss silk, or rough, with mohair; and of all shades and colours of the rainbow—yellows, reds, and blues being, perhaps, the most generally favoured.

All legal restrictions in regard to the times and methods of salmon fishing apply equally to sea-trout, the habits of which are also generally very similar; it is unnecessary, therefore, to lay down any separate rules on the subject.

And so I say farewell, and wish all my brother sportsmen our old greeting on the Conway—'A tight line!'

JOHN P. TRAHERNE.

[Many of the patterns of flies suitable for loch-fishing for sea-trout (*Salmo trutta*) and for brown trout (*Salmo fario*), *et hoc genus*, may be regarded as practically almost interchangeable; that is, a sea-trout fly will sometimes, and not very infrequently, be found the killing pattern for brown trout, and *vice versâ*. The diagrams are facsimiles of two flies, dressed on my new turn-down eyed hook with up-turn shank—the fly on the sneck-bend (fig. 1) the 'Hackle Red' for brown trout, and that on the Limerick-bend (fig. 2), the 'Hackle Claret'

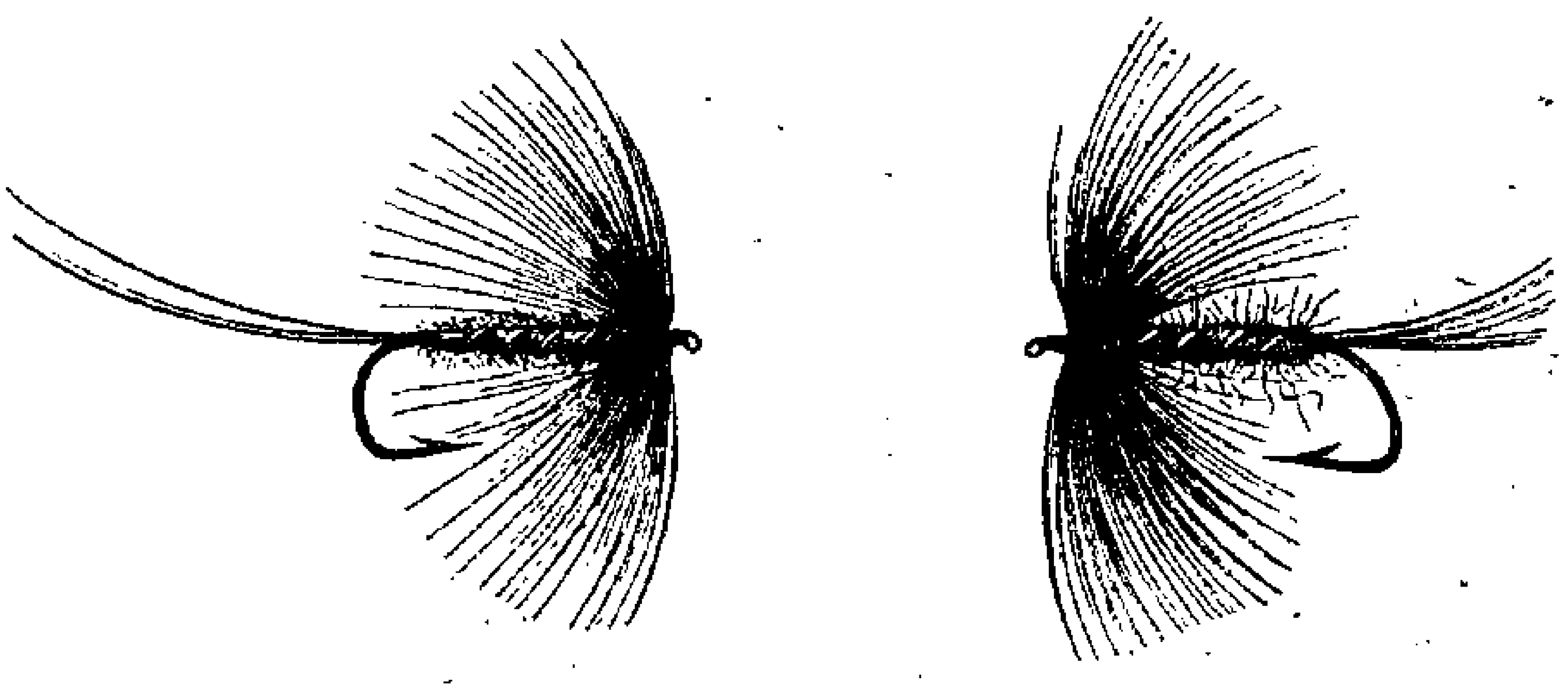


FIG. 1. FIG. 2.

for white (or sea) trout—with which I have often known this principle to be illustrated. Although the 'speciality' of the

'Claret' is most certainly as a sea-trout fly, and that of the 'Red' as a brown-trout fly, I can recall occasions when the 'Red' was the taking fly for the former, and others when the 'Claret' appeared the most killing for the latter fish.

I may perhaps add here the formulas for these and one or two others of my patterns and dressings of 'Hackle lake flies' for sea-trout and brown trout, which I have found very successful. The flies figured in the illustration represent good medium sizes for the two different classes of fish, but the size will, of course, frequently have to be constantly varied according to winds and waters, and fifty other purely local considerations. The question of size is, in fact, a vitally important one in all sorts of fly-fishing with all sorts of flies for all sorts of fish :—

HACKLE LAKE FLIES.
(FOR BROWN-TROUT.)

1. 'Hackle Red.'—Body scarlet 'crewel' (wool), ribbed with fine gold twist (not oval); dark red (natural) cock's hackle, with darker stem; whisk three or four fibres of same.

[This is the fly illustrated in the engraving, fig. 1. I have found it admirable for ordinary brown lake trout generally, and in the earlier part of July this year (1889) it did excellently well amongst the Gillaroo on Lough Melvin. Its proper place is emphatically as the tail fly.]

2. 'Hackle Yellow.'—Body golden yellow (not orange) silk, ribbed with fine bold twist or oval; medium red cock's hackle (natural), with darker stem; tail, three or four fibres of same hackle. With a tail of Indian crow, concave side upwards, but tied 'flat' on the hook, same as tail of fly in illustration, fig. 2, I have also found it very successful; but with this dressing my experience has been more limited than with the other.

[This fly—*employed, N.B., always as the dropper or bob-fly*—I have used for many years for lake trout, and though, of course, it has sometimes failed or proved only a 'modified success,' still I have never had so much sport with any other fly under such a variety of circumstances in different parts of the United Kingdom. On Loch Leven it did admirably on the few occasions I have fished there; and both for Gillaroo and sea-trout it has proved itself—take it all round—at least equal to any other dropper I know of.

I should be inclined to give this fly and and the 'Red' (No. 1) a good trial always for brown trout on starting upon unknown waters.]

3. 'Hackle Green.'—Body apple-green crewel, ribbed with gold tinsel; hackle, black cock's (natural); tail, scarlet ibis.

[This is a good fly on many lakes, both Scotch and Irish, and may be tried if either of the others fail, or as a third fly when three are used.]

(FOR SEA-TROUT.)

4. 'Hackle Claret.'—Body lightish ('pinky') claret pig's wool, ribbed with silver oval; hackle, black cock's (natural); tail, golden pheasant topping, laid on flat, as shown in fig. 2, which is a facsimile of this fly.

[This is the best lake fly for sea-trout that I know, and at that paradise of the sea-trout fisher, Ballynahinch,[1] Connemara, I have had splendid sport with it in all weathers and waters in July and August. The fly figured in the engraving—tied on a Limerick No. 7 (new scale)—is a good medium size. It may, however, be used with advantage even several sizes larger in very rough weather and rising water, and, *per contra*, in bright, fine weather, 1, 2, or even 3 sizes smaller. I have never found it do much as a dropper; its place undoubtedly is as the tail fly. As a drop-fly in lake-trout fishing for sea-trout I should be disposed to give a trial first to No. 2 ('Yellow'), and, that failing, to No. 3 ('Green'). If neither of these succeed, a blue or a black fly might be tried, for which, perhaps, one or other of the following dressings will be found as good as any]:—

'Blue.'—Body dark blue pig's wool, ribbed with fine silver oval; hackle, black (natural), or a dark 'Furnace' with very dark stem; tail, Indian crow, laid on flat, with concave side uppermost, or (2) a golden pheasant topping.

Blue is a colour that seems to kill best in the earlier part of the season, or when fish are running up fresh from the sea.

'Black.'—Body (not very thick) black pig's wool, or crewel, ribbed with fine silver oval; black cock's (natural) or a jay hackle; tail, Indian crow, laid on flat, concave side uppermost.

The above flies may be varied for experiment sake, if desired, by substituting silk for pig's wool or crewel, or *vice versâ*; but having tried all sorts of dressings of them myself, I have here given those that I have found in practice to kill the best. The reason why one fly kills best with a silk body and another with a pig's wool or crewel body I am quite unable to explain.

General rules for dressing all the foregoing flies.

1. The bodies of these flies should be dressed moderately slender rather than 'fat,' and slightly tapering from the shoulder (the thickest part) to the tail.

[1] This fishery, probably the best for sea-trout in the United Kingdom open to the public, is now leased by General Beresford, who allows no nets of any sort on the river, up which in consequence the salmon and trout have a free run into the beautiful chain of lakes above. The most central and convenient of the three hotels on the fishery is the Royal Hotel, Recess, where all information (which had better be obtained in advance) can be got from Mr. Redman, the energetic and obliging landlord. Of course fishing tickets have to be paid for.

2. The twist or oval should be applied *sparingly*; a few turns—say *three complete* turns altogether—I find, are better than many.

3. The hackle should always be turned on *nearly upright*—or rather, curling very slightly over towards the hook-bend, in the shape and position shown in the two illustrative diagrams. If hackles lie flat they only hide the body of the fly, and entirely lose the life-like movement which it is their special function to impart to the fly by opening and shutting with its movements in the water, somewhat like the motion of a jelly-fish.

4. For the same reason flies should never be compressed in a book, but kept loose in a box from the first moment of tying. This is also most important, at any rate as regards my patterns of hackle flies.

5. The length of the hackle should always be very nearly as long as the ength of the fly from where the hackle starts to the extremity of the hook-bend (*vide* cuts).

6. In all these and other flies dressed on my eyed hooks, it is really essential that the neck of the hook, between the eye and the head of the fly, *should be left clear for the gut*, as shown in the diagrams. The length of the hook-shank is, moreover, especially designed to allow of this, and if the fly were dressed right up to the loop, not only would not the attachment to the gut be so perfect or complete, but the body of the fly would in most cases be disproportionately long.

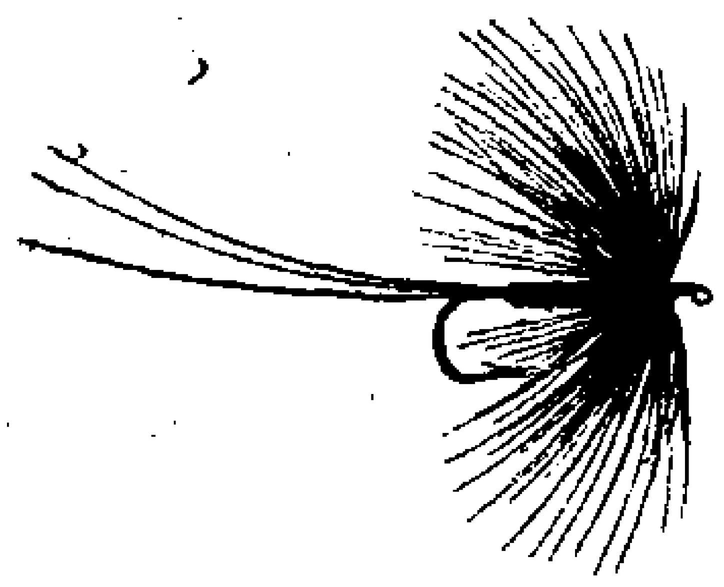
I have furnished patterns of these flies to Messrs. Farlow, 191 Strand, who have been in the habit of making my flies according to instructions for many years. To this course I have been driven by the monstrosities—they can be called by no other name—constantly met with at tackle shops, or shown to me by fly-fishers as 'my flies.' (I refer to my three original patterns of 'typical flies'). Briefly, my collection of them forms a sort of 'chamber of horrors!'

The same cause has led me to substitute, in the present patterns, natural for dyed hackles. I am satisfied that the latter have in some cases, and in certain shades, advantages; but these are more than compensated for by the uncertainty as to the nature of the dye used by different fly-dressers, and the colours they produce.

A word as to Stream Trout flies (I do not refer now in any way to dry-fly fishing). These I fancy look somehow best, and realise better the idea of 'a poem on a hook,' when dressed on the sneck-bend (see cut), and I would suggest the following

three flies as good all-round killers, one or other of which will generally bring fish to the basket. They are all hackle flies.

As before observed *à propos* of lake flies, the great thing in dressing all flies on these eyed hooks is to leave clear the 'neck,' as shown in the diagram, to receive the jam-knot. The length of the hook-shank is specially designed to allow of this.



'FURNACE-BROWN' DRESSED ON PATENT SNECK-BEND UP-TURN SHANK EYED HOOK.

1. The 'Blue upright,' dressed with yellowish-grey quill body and slate-blue hackle and whisks (no wings). 2. The 'Red spinner.' Pale crimson crewel body, sparely ribbed with the finest gold thread (not oval); dark-red (natural) cock's hackle with darker stem; whisks, 3 fibres of hackle (no wings). 3. The 'Furnace brown.' [A fly of my own, with which I have had sport in the streams (and not infrequently in the lakes also) of England, Ireland, Scotland, and Wales] :—Body very dark chocolate-coloured silk, ribbed, sparely, with fine gold thread (not oval); dark furnace-hackle, with darker stem; whisk, 3 fibres of the same.

Messrs. Farlow have also my dressings and patterns of these flies.—H. C.-P.]

If Salmon fishing be, as claimed by its devotees, the 'noblest' branch of fly fishing, there can be no doubt whatever that Trout fishing is the most popular branch; and, indeed, good Trout fishing appears likely soon to become as difficult to get as Salmon fishing was twenty years ago. Comparatively, though not positively, it is still, however, easy to obtain—just in proportion, in fact, as there are a hundred streams and lakes containing the former fish for one that produces the latter.

As the taste for Trout fly fishing has increased—which is only another way of saying that the Trout is more fished for—so does the difficulty of catching him become more conspicuous, and success must be sought not alone in a high degree of skill in the actual use of the fly rod and line, but also in refining to the very utmost every item of tackle employed. To keep well out of sight of the fish it is proposed to catch is another golden rule, rarely to be neglected with impunity in these days of enlightenment and progress. Clearly in this case

. . . Distance lends enchantment to the view,

so far as at least one of the parties to the transaction is concerned. 'Fine and far off' is, therefore, a maxim invaluable in both Trout and Grayling fishing, and appropriately introduces the reader to Mr. H. R. Francis' article, whilst indicating at the same time its scope and line of practice.

H. C.-P.

FLY FISHING FOR TROUT AND GRAYLING:

OR

'FINE AND FAR OFF.'

INTRODUCTORY.

It is a shallow as well as a dismal scheme of life which ignores or undervalues the importance of recreation. Never, I believe, was there an age in which it was more indispensable 'For weary body and for heavy soul.' We are living at high-pressure; business has become more engrossing and the pursuit of what is called pleasure more laborious. It is more than ever desirable to find occasional change of scene and occupation which shall be really refreshing; which shall at once recruit our bodily energies and give free play to faculties and feelings which are shelved during the daily routine of working life. Mere locomotion is not enough; our thoughts must be turned into new and pleasant channels, and we must seek places suited to new phases of agreeable activity. It is told of one of the most eminent of English conveyancers that when induced for his health's sake to visit the seaside, he carried with him, by way of light reading, 'Fearne on Contingent Remainders.' Sea air may have done something for him; but where was his recreation? His mind was kept running in the old groove.

It is of course true that what is recreation to one man might be mere weariness to another of different tastes and habits, who feels the strain of over-work in different functions

of body or mind. A well-earned holiday may be employed in fifty different ways, each having its own fitness. But in comparing various recreations we may fairly give the palm to that which suits the greatest number of cases; that in which the largest proportion of intelligent men can find healthful bodily exercise combined with light yet interesting occupation for the mind. And I know none which satisfies these conditions more completely than angling. In its most refined form indeed—I need hardly add that I speak of fly fishing—it rises to the dignity of an elegant and ingenious art, combining in a singular degree the active and the contemplative, the practical and the scientific element.

I have had my fair share of other more violent, perhaps more exciting field sports, and am not insensible to their attractions. Happily, Piscator in these days need not wage a wordy conflict with Venator or Auceps, for the same men often excel in several branches of sport, and the friend whose opinion on the following pages of angling notes I shall value most highly is not only well known in the hunting field but singularly successful in the practice of falconry.

Instead of apprehending any lack of sympathy with the zeal for my favourite recreation which leads me to add yet another to the many contributions recently made to its literature, I rather fear that I shall be held to have done but scant justice to its varied attractions and resources. . . .

But I will not open my case with an apology. An angler from boyhood—a fly fisher for more than fifty years, I will rather 'assume desert,' so far as to claim a favourable hearing for my experiences of an art which I can still practise with healthy enjoyment, and in despite of age, with a fair measure of success.

The very name of fly fishing carries back my fancy to many a pleasant hour—many a lovely scene. Once more afloat on the still bosom of a Highland loch, I watch with eagerness the dark line widening from its western shore, welcome herald of

WILL HE HAVE IT?

the breeze that will soon break up the 'mellow reflex' of the landscape around me, and refill the frame of the mirror with rippled silver. The purple-robed, grey-headed hills seem closing in upon me; high overhead sweeps the eagle, watchful, yet seemingly unterrified; and see, by the foot of yon burnie the roe has stolen forth to drink, from his green couch amid the birches and brackens. Or, knee-deep in a ford of the Teme, where he lingers lovingly in many a circling sweep round the ivied cliffs and oak-clad slopes of Downton, I wave a potent, and in that well-proportioned stream, 'all-commanding wand' over the rough eddy, sentinelled with watchful trout, or where the quicker run deepens into the haunts of the grayling. Now I seem to hear the hoarse chiding of the Greta, as he chafes along his narrow bed, or the roar of 'old Conway's foaming flood'—now the gentle murmur of some English stream, rippling through sunny meads, is 'rife and perfect in my listening ear.'

The enjoyment of these local memories is heightened to anglers by association with the stirring details of what is always an interesting, often a most exciting sport. We remember where the monarch of the Test, long coy and recusant, was at length fascinated by the drop of the tiniest of midges over his very snout; and where, with our gillie's assistance, we contrived to land three lusty trout together, like the elfin in the ballad, 'a' dancing in a string.' We execrate the treacherous stake which had well-nigh robbed us of a good fish and a cast of flies at once, or bless the memory of the smooth sand bank, pleasant to weary feet, where we at last headed, turned, and wound in the salmon who had kept the lead for some three hundred yards down a rocky channel, among stones loose, sharp, and slippery—perilous at once to shins and tackle. How have we enjoyed the early breeze that crisped the stream on a summer morning; the well-earned rest on a mossy bank in the deep hush of noon, and the homeward stroll through the pensive calm of evening.

Independently of the fishes and insects with which the angler is more specially concerned—in themselves a little world of

marvel and mystery—his avocation gives him no common opportunities for observing some of the most beautiful and curious forms of animal and vegetable life. Stealing along by the water's edge, his footfall lost in the murmur of the stream, or muffled by Nature's carpeting, he enters unsuspected the haunts of the shyest creatures. He sees the otter glide down from his cairn, or lift his sleek treacherous visage in the midst of the pool; he notes the general consternation of the salmonidæ at the sinuous rush of the seal, whom hungry pursuit has tempted beyond the salt water; 'doe and roe and red deer good' slake their thirst in his sight; he surprises the blackcock's deserted mate and progeny in their moist dingle, the wild duck and her brood as they paddle through the sedges. Leaning back against the trunk of a willow, he sees the kingfisher, a living sapphire, shoot close to his dazzled eyes, or from her perch over his head drop on a sudden plumb into the river, and as suddenly emerge with her prey; or hidden in the shadow of an overhanging rock, he marks the water ouzel, glittering in a silver panoply of air bubbles, run briskly along the sandy bottom of the burn. Even the innocent gambols of the much-calumniated water rat, joyous after his guiltless feast of grass and water weeds, or the familiar wiles of the nesting peewit will find him not an unamused spectator. If a botanist, he will pick his choicest ferns in the damp rocky hollows by the waterfall, his rarest lichens on the bare slopes above some Alpine tarn, his favourite orchises in the meadows watered by a well-peopled stream. He will rejoice in the delicate beauty of the pinguicula along some tiny moorland runnel, and admire the silver-fringed stars of the bog-bean beside deeper and blacker waters, where the quaking turf craves wary walking. Mr. Balfour's utmost indulgence would hardly admit me to a degree in botany, yet it was with a glow of pleasure that I first found myself throat-deep in a bed of the *Osmunda regalis*, on the banks of the Leven, or gathered the 'pale and azure-pencilled' clusters of the wood-vetch by Greta-side, or discovered the fringed[1] yellow water lily on the

[1] *Villarsia nymphæoides.*

Thames, gleaming like the floating lamp of a Hindoo votaress. If a geologist, the angler may ply his hammer and fill his note book along the very stream or tarn whence he fills his basket. If an artist, his rambles will acquaint him with every form of the picturesque, from the stern grandeur of Llyn Idwal to the tranquil beauties of Father Thames.

It is this many-sided character of the angler's art which has united so many suffrages in its favour, and has made it attractive to so many distinguished men of such dissimilar tastes and characters. It is this, finally, which has given to the art a literature of its own, abundant and various, in proportion to the number of its votaries and the diversity of their minds, and often highly enjoyable even by the uninitiated.

Writing as long ago as the year 1856 on a subject in which I then felt, as I still feel, the liveliest interest—that of the fly fisher and his library—I found a plea for my essay in the national taste. We were, I remarked, *a* nation of sportsmen, but *the* nation of anglers.

And now, after twenty-seven years, fresh from the attractions of the Fisheries Exhibition, I feel that what then was a truth is now almost a truism, and remount my favourite hobby in the full belief that in spite of the lapse of years he is not yet 'forgot.'

Both the art and the science of angling have made great progress in the interval; the education of our fish has advanced, and it is only an equal progress on the part of the fly fisher which can enable him to maintain his old mastery over the salmonidæ. And, if I venture to believe that I can still offer something worth a reader's notice on questions now better understood than ever, it is because I have retained my old taste for fly fishing in all its freshness, have pursued the sport on occasional leisure days both here and at the Antipodes, and have preserved a careful record both of successes and failures.

I take my motto from Charles Cotton, whom even more than dear old Izaac Walton I regard as the father of modern fly fishing. In those bright Derbyshire streams which he loved

so well and doubtless fished so skilfully, to fish 'fine and far off' still gives the angler his best chance of success, and there are few waters fairly worth fishing where it may not be practised with advantage.

But at the outset of remarks which are nothing if not practical, I ought to observe that even in following Cotton's admirable rule there may be mistake or excess. The rule is, in fact, only one method of carrying out the great principle which underlies all success in fly fishing. Unless under exceptional conditions of weather, water or both, Piscator must above all things keep out of sight; must not allow Piscis to catch a glimpse of himself, his rod or the shadow of either; must show him, in fact, nothing but the fly which is to 'lure him to his own undoing.' This principle, it may be said, is too obvious to be worth stating. Yet if generally admitted it is very insufficiently acted upon. Not long since I was chatting with a friend near Wansford Mill, on the well-known 'Driffield Beck.' He had been trying the lower water whilst I had fished down stream to meet him. The day was bright with little breeze, but the fish were feeding, and my brother angler's creel hung heavy at his back, while the lad who carried mine seemed nowise sorry to rest it on the bank. A third angler appeared on the scene. He was striding along close to the water's edge, down stream, making from time to time a long cast with a two-handed rod across the open beck. He really did not cast badly, though his tackle seemed rather coarse and his fly was of a size strange and alarming to Driffield trout of the present generation, whatever it might have been to their remote ancestry. But my friend and I were well aware that as he moved, there was 'fuga et ingens solitudo' in front of him; that the fish were literally scudding in shoals from his obtrusive presence.

This was no doubt an extreme case, but the same error in kind, though less in degree, is constantly committed even by practised hands. I do not find crawling or crouching till within four or five yards of a 'shy' stream quite as easy as I did forty years ago, but I resort freely to each as my cast re-

quires, and often withdraw completely from the bank to move again cautiously towards it without the risk of sending an alarm along the stream. Yet I can never fish a bright water on a bright day without saying to myself a dozen times, 'I might have had that fish, had I only kept better out of sight.'

There are of course many streams, mountain and moorland, where such cautious tactics are needless; but in the best English trouting counties—Hampshire, for instance, or the East Riding, Buckinghamshire, Salop or Devon—concealment is the first requisite for sport. In order to this, there are many details to be studied. In the first place, if the day be sunny, try as far as possible to look the sun in the face. To feel his warmth on your back and shoulders is doubtless far pleasanter than to be dazzled by his light, both direct and reflected from the water; but if you want a heavy basket you will disregard the inconvenience for the sake of remaining unseen. Beginning by a short cast under your own bank, you will gradually lengthen your throw till your stretcher drops in deep shade close under the opposite shore, and each fish successively covered will see your fly before any shadow from rod or line falls over him. If the wind as well as the sun be in your face, humour it as best you can by casting aslant, and working your rod horizontally instead of vertically, but unless it blows great guns, when the light from behind you will do little harm, persevere in defying both sun and wind. 'It's dogged as does it.'

Secondly, avail yourself of every scrap of cover. On no account let a fish see your figure relieved against the sky. A big bush judiciously employed as a screen may enable you to do more with a short line than the best far-off casting could achieve without its shelter. The apparent stupidity of fish swimming high in a still sunny pool when thus approached under cover is often most amusing. I have seen large trout in the middle of a July day swim leisurely up to my fly and suck it in without the slightest misgiving. If bushes are wanting, a slight fringe of waterside plants and flowers—willow herb, loose strife, figwort and the like—often does good service by blurring

the outline of your figure. Even the colour of your clothing is not unimportant. Black or white are on a bright day equally objectionable, especially for your hat. It should be remembered, too, that a screen is useful behind as well as in front of you. When there is barely footing between a high hedge and the water—I have a few such spots in my mind's eye—the fish will hardly be aware of your presence unless you exhibit some violent contrast of colour. But a far commoner illustration of my meaning may be found in the neighbourhood of mills and factories, where a dead wall lies near the margin of an inviting stream or pool. Move cautiously with your back close to the brickwork, and you often find to your surprise and satisfaction that while you see the trout on the feed, they fail to see you. Casting from such a position no doubt requires a peculiar knack, but that difficulty once overcome the game is all in your favour. The fish to whom you have thrown takes the fly in the most confiding manner, and till repeated experience has familiarised you with this result the whole affair seems almost uncanny—as though you had the fern seed and walked invisible. There will, of course, be great danger of betraying your presence when landing your fish, and I can only recommend you to keep as close to the friendly wall as you can till you have led your trout some way down the stream, and not to use the landing net till he has made his last rush.

There is another aid to concealment which I think is not generally recognised, but to which in certain waters (notably in Foston Beck in the East Riding) I have owed many a brace of heavy fish. Every angler has obtained some bold rises by casting somewhat heavily so as to break through the coating of foam—'beggars'[1] balm,' Walton calls it—which forms over eddies for some distance below a fall or strong rush of water. But in calm hot weather there often forms over the shore-ward

[1] I have always suspected a mis-spelling here on Walton's part; there is nothing suggestive of fragrance or healing in such scum. Beggars' *barm* must surely be the true word—yeast which costs nothing.—[No doubt this is so.—Ed.]

surface of still and somewhat shallow water a fine oily film, due partly to the sporules of water weeds, but mainly, I believe, to the floating ova and larvæ of minute insects, which is only visible in particular lights, and yet very effectively dulls the quick sight of the trout. When you see a patch of inshore water dimmed by such a film, keep low within an easy cast and wait till you see not a distinct break or rise but a slight dimpling of the water caused by the suck of a fish. Drop a single fly a little above him, and his capture is almost a certainty. The value of this resource lies in its being most available in apparently hopeless days, when there is a strong sun and no breeze stirring.

Yet again, fish may often be taken, though at some risk to your tackle, when they are lying in small open spaces among weeds. Keep low—for on bright days this is a *sine quâ non*—and if your fish be but a few inches below the surface the refraction will prevent his seeing you or your rod, and a long cast up stream or across will take him off his guard. But in such a case there must be no playing him; ere he has recovered the first shock of finding himself hooked he must be hurried down stream along the surface till you have him in open water, and can square accounts with him at your leisure. In this rough-and-ready process the hold, of course, may give way, and possibly the tackle. The latter disaster is, however, less frequent than at first sight would seem probable. The fish is taken by surprise, and has no time for organising an effectual resistance, while his forced march down stream quite upsets his ordinary habits. It is when you are fishing a loch on a breezeless day and are tempted to throw over a fish whose 'neb' you have seen quietly thrust up in a small opening among water lilies that the 'deadly breach' is most 'imminent,' and 'hair-breadth 'scapes' only attainable by the happiest combination of caution and audacity. There is no current to help you, and one turn round a tough stalk will lose you both fish and fly. Yet I can remember on a sultry July afternoon, when there was no other possibility of getting a rise, killing in Loch Kinder by this

perilous cast four or five brace of pretty fish with the loss of but a single fly.

I am tempted here to give some instances from my own experience of success attained under difficulties by *keeping out of sight* in various ways.

There was a reach of the upper Itchin where I had more than once found the trout, though sizeable and fairly numerous, yet provokingly wary and suspicious. The bank on one side was absolutely bare and very low; on the other—the southern side—it was steep and moderately high, by no means favourable to 'keeping dark.' But parallel to the course of the river, and at nearly the same level, there ran an irrigation cut, some two feet deep with rather a muddy bottom, about five yards distant from the main stream. Into this one day I lowered myself—having long legs and wading boots to correspond—and worked the stream with a double-handed rod by long casts. I could only just see the opposite edge of the water, but was consoled for losing my view of the fish by knowing that the deprivation was reciprocal. The dodge completely succeeded. Though I felt the rises instead of seeing them I rarely failed to hook my fish and very seldom lost him when hooked. The difficulty lay in scrambling out of my ditch and rushing towards the river before my prisoner could bring me to grief by dashing under the near bank. In this way I did considerable execution on several occasions. I ought in frankness to admit that with more fishable water within easy reach many anglers would have thought the success hardly worth the pains it cost. This was certainly the opinion of a dear old friend and fellow-sportsman who witnessed my first *sortie* from the trench and landed my fish for me. He laughed till he cried at the figure I cut in scurrying towards the bank, and could never afterwards be induced to exhibit himself in the like undignified position.

I take my second instance from a lucky hit in loch fishing. Some thirty years ago I was afloat with two friends on Loch Treig, to the farther end of which we intended to fish our way.

It was a hot forenoon in August, one of those tantalising days when,

> Instead of one unchanging breeze
> There blow a thousand little airs,

and I soon perceived that there was little profit in hunting the 'catspaws' which supplied the needful ripple—if you could only catch them. So I induced my friends to land me some three miles from the shepherd's hut at the end of the loch where we were to find our luncheon. I was equipped for wading, and had before me several reaches of fine gravel where the water deepened very gradually towards the 'broo'—that critical point, where, in this as in many other lakes, the shoreward shallow rapidly shelves away into water too deep for the fly. In fact it often happens that at this point a belt of water from ten to twenty yards in breadth contains all the best of the taking fish. Within this belt are mostly small fry, without it lies the deep, only fit for trolling. The water before me was smooth as glass, the bottom delightful for wading. Moving cautiously to make the warning wave which must precede me as small as possible, I advanced into the lake as far as I could, and as I did so became more and more aware that fish were moving just where the water deepened within a long cast of my two-handed rod. I threw but one fly, and that smaller than the size I usually preferred. Throwing as far as I could, I let my whole cast sink before giving any movement to the fly, and was repeatedly rewarded by finding that a trout had hooked himself a foot or so under water. Every now and then, however, the fly dropped so close before the nose of a feeding fish that he was fast on the instant. Briefly, when we met at our tryst (where I confess to have been half an hour late) my friends had three fish between them, whilst I had six-and-thirty. In this case it will be seen the secret of success lay in keeping low, so that the effect of refraction kept the unimmersed portion of the fly fisher's figure practically out of sight.

My next illustration shall be one out of a thousand memories of the famous Driffield beck. It was a July day some forty

years ago when I drove over from Hull to enjoy a day's fishing and dine with the club in the evening, which in those days meant half-past six. I did the twenty-three miles in two hours and a half, and before eight o'clock had stabled my horse at the 'Bell'—a cheerful, cosy inn, which I am happy to add still flourishes, for the comfort of anglers, in the old country style. Early as I was, however, the sun was yet earlier, and by the time I had disposed of a substantial breakfast the day was already sultry without the faintest promise of a cloud or breeze. Having exchanged greetings and predictions of empty creels with two or three members of the club who had slept at the inn and were just making their first appearance, I strolled into Dobson's for two or three special flies, and then started for the King's Mill beck—the uppermost and liveliest reach of water near the town. Here, however, I found myself forestalled, and fishing in the wake of an angler who 'scatter'd tumult and affray' along the stream by a lavish exhibition of his person. Nothing went right, and at noon I found myself at Sunderland Wick bridge, with a brace only of fish in my creel, surrounded by still waters and with a blazing sun overhead. No look-out could well be worse. But as I gazed up the beck I caught a gleam of hope. Some thirty yards above the bridge a still back-water joined the main stream, and over the junction drooped a large willow. I missed the tree last year and lamented it as Cowper did his felled poplars. But it was then full of life and leaf, and just outside the sweep of its boughs a legion of gnats were playing. Yes! there was a rise—and there another—and anon three or four snouts came to the surface at once. In another minute I was lying on my face by the sedgy bank within a long shot of the enemy, my rod held low, while my single fly, a small black gnat, wavered in the stream far below me. I lay low,' like Brer Fox, till I felt sure that the trout had not taken the alarm, and then on the first ruffling of the water by several consecutive rises dropped my fly with a long horizontal cast just behind the willow. That moment I was fast in a good fish, which I worked steadily

down stream, never rising from my knees, till I brought him within reach of my boy, who was ambushed with the landing net close above the bridge. No. 1 safely basketed, I resumed my former position, and waited ten minutes before essaying another cast, which proved immediately fatal to No. 2. In brief, I continued these tactics till I had landed six brace of good fish from that one spot, and then sauntered leisurely towards my inn, intending to have my fish weighed at Dobson's by the way.

I have already mentioned this name in the baldest fashion, and ought to explain that the worthy watchmaker who bore it was in those days a sort of factotum to the 'D.A.C.' An angler himself, he well knew what part of the stream would promise the best sport on a given day, and what fly was likely to be strong on the water. Then he was purveyor-general of tackle, his assistants tying not merely attractive but strongly built flies, which might be trusted with the heaviest fish. Lastly, he kept the register of captures, now left to the head keeper, and it was the common practice after a day's fishing to take one's basket to his shop to be weighed. My boy Keddey hurried on thither before me, proud of his burthen, but on overtaking him at the door I found him sobbing bitterly. He expounded his grief in these broad words: 'The gentlemen *will* say yo' nobbled 'em, and ah know yo' didn't.' The fact was that there were six rods on the water that day, and my fish weighed 18 lbs. as against 14 lbs. to the joint credit of the rest. A novice, the 'net proceeds' of whose day had been *nil*, started between joke and earnest the notion that I must assuredly have been plying my landing net in the spring-ditches. Hence my poor boy's sorrows. How well I remember the jovial club dinner of that evening! I had much *los* when the tale of my success was told. But in truth there was little to brag of; anyone might have done the same who understood fishing 'fine and far off,' and spared no pains to keep out of sight.

The question of fishing up or down stream is closely connected with this part of my subject. There is now so general a

consent amongst anglers in favour of up-stream casting that it would seem superfluous to give the reasons which make it preferable in most cases. I am rather inclined to remind brother anglers that the rule must not be made absolute, and to point out some cases in which the opposite course should be adopted. And first, if in fishing up stream you would have a strong sun at your back, you will betray your presence less by making your beat downwards. This, however, must not involve the absurd blunder of hauling your flies against the current, thus making an unnatural ripple which cannot but alarm a trout of any experience. In fishing down stream, begin if possible from a stand several yards distant from the margin, and throw lightly over the in-shore water a little above you, lengthening your cast by degrees till you have covered three-fourths of the width. Then, and not till then, you may advance warily to the bank and try the deadly cast under the opposite shore. From first to last you must take care that the movement of your flies be natural; that they go down easily with the stream, with occasional slight checks from the wrist to mimic the struggles of a drowning insect and produce that play of legs and wings which is so irresistible to a hungry trout. Retire from the bank after working out your cast, and repeat the same process a dozen yards farther down. If you hook a good fish, let him fight up stream as long as he will, that you may avoid disturbing unfished water in bringing him to the net; but should he insist on a downward rush do your best to keep ahead of him, showing yourself no more than is absolutely necessary. The portion of the stream which you are thus compelled to hurry by should be allowed a good spell of rest before you move up again to fish it.

And here I must be allowed a brief digression. Fish get an inkling of your movements in two ways—by sight, and by a sense of vibration which is equivalent to hearing, and you must be on your guard against betraying yourself either way. If the river you are fishing runs through a rocky bed, you need not walk warily except for the safety of your ankles. But if it runs through boggy soil, or between banks of loose and crumbling

pasture land, you must tread softly and cautiously. A heavy or hasty footfall will be felt by the fish under the near bank, who will rush out and spread alarm among their friends in mid-stream.

I remember finding myself in a ridiculous fix in some pasture land of the 'crumbling' character along the Leintwardine club water. The favourite dog of a friend, who was busy with his hammer among the neighbouring strata of old red sandstone, deserted his master's company for mine, having found, as I verily believe, trout more amusing than trilobites. Unluckily there were sundry cattle about—hideous white-faced Herefords—who kept charging after poor Crab, and driving him to my feet for refuge. They always stopped within a few yards of me, but their trampling had a visible effect on the trout whom I wished to circumvent. There was a general hurry-skurry over the shallows. I might as well have been casting from the deck of that *bête noire* of Thames anglers, a steam launch. I felt, like the legendary Cambridge Don when *Frau Professorinn* presented him with twins, that 'I must put a stop to this.' So I hardened my heart, filled my pocket with pebbles, and pelted poor Crab till he found he must shift his quarters, and scuttled away to his master with a train of bullocks stampeding in his rear. This of course was an extreme instance of bank shaking, but many a time and oft have I known a heavy and heedless footfall mar the success of a promising cast from similar ground. And I could point out several reaches of well-stocked water which most of the local anglers have come to regard as scarcely worth fishing simply from their not allowing for the 'quaking' character of the ground. Experience alone will teach the necessary caution, but where the buck-bean shows its silver stars, or 'the wild marsh marigold shines like fire,' the fly fisher may at once accept a notice to move gently and lightly.

To return to the question of 'up' or 'down.' In a very rapid river, again, more, I think, is lost than gained by the up-stream cast. The line is brought down so rapidly to the caster that it is hardly possible for him to keep it taut enough for the fish to hook itself, and 'striking' is practically out of the question.

Moreover, as the fly gives more hold to the water than the gut, and therefore moves faster, it is apt to be rolled back on the footlinks, and presented to the eye of the trout with most suspicious surroundings. Yet again, there are some places, and those often favourite haunts for fish, which must be fished down stream or not at all. Let me give one example out of many. There was a small bye-wash, some 120 yards long, leading down from the upper to the lower branch of a Hampshire stream; the near bank sedgy, the farther bank completely overhung with dwarf willows. It was scarce five feet wide, but mostly deep, and presenting in miniature every variety of stream and pool. But to throw on it was simply impossible, and I shall never forget the face of the old keeper when he saw me proceeding to fish it. He sat down and lit his pipe, expecting a quiet time till I returned to my right mind and the open river.

Beginning at the top of the streamlet, and keeping the point of my rod under the overarching boughs, I let my tail fly float down the water, varying its descending movement by wrist-play, while my dropper made dimples on the dark surface In half a minute I was shouting for old W—— and the net Luckily the fish chose to run up stream; a powerful rod and shortened line enabled me to keep him out of the willow roots and he was easily netted in the hatch hole. A second capture followed very speedily, but the fish took down the watercourse and I disturbed fifty yards of promising water in my struggle to keep him out of mischief. However, I managed to basket a third fish before I reached the junction with the main river I tried the same unscientific but killing process on a dozen subsequent occasions, never taking more than three or less than two trout in that tangled thread of water. All these fish were dark-skinned, owing to their shady *habitat*, and all pretty nearly of a size, weighing from eleven to fourteen ounces, something doubtless in the conditions of the water making it a suitable feeding ground for middle-aged trout, though the cause of 'the thus-ness' I cannot pretend to explain.

I may add—to encourage the pursuit of fish under difficulties—that I do not remember to have lost more than one fish off the hook in all my battles up and down that dangerous reach. The rises were bold and sure, because the artificial fly was a stranger there—in fact I do not believe that anyone but myself had ever risked his tackle in such a spot. With an ordinary single-handed rod, however, success would have been impossible; I could neither have worked my flies nor controlled my fish. I used in those days a fourteen-foot double-handed rod of Eaton's, extra stiff and lengthened in defiance of all symmetry to suit a fad of my own. I fancied that the original hollow butt felt light and weak, and got the maker to shape me one nearly a foot longer and powerful enough to bear boring for a spare top. That rod, by the bye, is still forthcoming after forty-five years' hard work in many waters, and I wish its master were in equally good condition.

Thus far I seem to have proceeded without a due arrangement of my subject. I was tempted by my title to plunge as it were *in medias res*, and to show the purpose and conditions of fine and far-off casting. But as fly fishing was my theme I might as well, perhaps, have begun with the fly, the lure to which above all others the true angler loves to resort. The mimic insect is in every way interesting. The variety of materials now employed in its structure exceeds in these days even the extensive range suggested by Gay in his elegant description. Bodies of quill or gutta-percha were doubtless unknown to him, and the endless shades of pig's down and mohair. The many forms of gold and silver twist or tinsel which seem to have so great an attraction for the *Salmonidæ* belong to a later date than his. And though he presses 'each gay bird' into his service, I doubt whether he would have known how to utilise the kingfisher's blue, the crest and hackles of the golden pheasant, or the killing plumage of the wood duck.

The Fisheries Exhibition brought out a wonderful display of artificial flies, English, Scotch, and Irish—I crave pardon of the judges for not having placed the Scotch flies first

—of every size, build, and colour. Indeed, as I ranged from case to case trying to form my own estimate of comparative merits, I felt tempted to exclaim with Diogenes at the fair, 'What a multitude of things are here of which I have no need.' Still the beauty, the delicacy, and in many cases the imitative skill of the work rendered the show very attractive.

Another source of interest in a well-tied fly, and notably in the very smallest, is its extraordinary strength and durability considering the materials employed. An angler must no doubt have tied many a score of flies for himself ere he can fully appreciate this excellence. In a case of flies set up for show it is assumed rather than proved to exist; but we may be sure that the exhibitor did not attain his reputation for such 'marvellous delicate ware'—as Queen Bess said of her first silk stockings—without producing an article capable of resisting both the strain of a good fish fighting for his life, and the repeated grinding and chewing of tiny teeth.

To build a salmon fly strongly is comparatively easy. There is ample room and verge enough for the firmest lapping of the hook to the gut, and for the tying-on in due succession of the various materials which form the body, legs, and wings of the highly composite insect, while the loop at the head, which was almost unknown in my boyhood, gives the needful strength at the point where the friction is greatest. But when we look at a tiny olive-dun or quill-gnat, such as often plays havoc among the heavy trout of our best chalk streams, we may well marvel at the skill which has made a few turns of fine silk not only join hook to gut indissolubly, but bind minute portions of various material together in a firm and shapely whole.

A trout fly, be it remembered, needs above all things to be strong. Neatness and finish may often be dispensed with, if the colours be only right, but strength is indispensable. Without it, the more attractive the lure, the more grievous will be the angler's disappointment. The points which are naturally weakest in the fly ought to be especially looked to. Judging from my own experience, I should say that four fish are lost from

the breaking or bending of the hook for one that escapes by the gut giving way. It is mainly with sneck-bend hooks that breakages occur, and these are apt to give way either just above the barb, or at the angle nearest to it. With regard to the number of flies to be used on a cast—a *vexata quæstio* amongst anglers—no really general rule can be laid down. In fishing a stream where the fish are large and the flies to be used small, it will often be found the best policy to use one fly only and that tied on a Limerick hook of the best make. Indeed, whatever the character of the stream, I prefer a hook of that class for my stretcher. It swims truer, and as it carries its point in the same vertical plane with the bend, seldom fails to hook your fish in the lower jaw. But on the other hand, there are many streams in which a second and even a third fly will greatly assist your basket.

It is not merely that you may please the trout better by offering them a choice, though this is obviously true, and doubly so where the water often changes its character. The motion of a dropper cleverly worked, especially over an eddy, is essentially different from that of the tail fly, and imitates a phase of insect life with which fish are familiar, that in which the fly keeps dimpling the water in a series of short descents, probably dropping an egg every time it touches the stream. The nature of this motion is well recognised by the term 'bob fly,' so often applied to the dropper, and the young angler will do well to study it carefully till practice makes him perfect.

If it wasna weel bobbit, we'll bob it again!

It is in this up-and-down play of the fly that the sneck-bend hook is so valuable, seldom failing to take hold somehow, somewhere. When it strikes on a bone, however good the temper, it is not unlikely to give way. But if care be taken to test each hook beforehand these mishaps will be very rare. If you have had a dozen flies dressed to your order, and cannot feel sure that the hooks have been carefully proved, try one or two by fixing the point in a board and giving a strong pull on

the gut. Twice in my life I have come to utter grief by neglecting this precaution, the flies being in each case only too attractive, but the hooks almost rotten. In one case I lost seven fish in the course of an afternoon, which would, I honestly believe, have weighed very nearly two pounds apiece. The other case, though less disastrous, was even more remarkable, as I was using a medium-sized fly on a Scotch tarn where the trout ran small. I took above a hundred, which would hardly have averaged five ounces, though they were strong and red-fleshed. But the way in which they 'chawed up' one particular batch of flies which I had had tied especially for small rocky lochs was really extraordinary. It seemed as if they crushed the hooks in their mouths. Full a score of my favourites came home to me broken at the bend, and in many cases I had scarcely felt the rise, so that several fish must have had their wicked will of the defenceless fly.

As I have already said, my losses through the breaking of the gut have been comparatively few, and almost always distinctly due to my own fault. The point of greatest danger is of course close to the head of the tail fly, where a momentary check takes place in the free unfolding of the foot links, even when the cast is most carefully made. The friction at this weak point is naturally increased when a fish is being played, since if he is firmly hooked the gut is apt to be strained when forming an angle with the wire. In dressing a large or a medium-sized fly something may be done to obviate this mischief by a few turns of fine silk set with copal varnish round the gut just above the head of the fly. But in mere midges—and it is with these that the greatest execution is now done in our best trout streams—this precaution is impossible.

It only remains that the fly fisher look often and closely at this critical point in his tackle, especially when the trout rise boldly and the fun is fast and furious. It is a great bore, no doubt, to have to change a killing fly at the first symptoms of 'fraying;' but a far greater to put on a fresh one when the first has been carried off by a good fish.

The special danger here indicated is likely ere long to be a thing of the past. The eyed hook is now in the field, and when perfected will render what is now the weakest point in the delicate gut required for trout fishing practically secure against irregular friction. But thus far the 'eye' appears too clumsy for the tiny flies which most require it. Had I to design an eye suited to the smallest hooks, I should borrow a hint from the needle-maker, forming the orifice for the gut like that in a small gold-eyed needle, though rounder, and lining it with some soft metal. The lapping at the head of the fly would thus be quite inconspicuous, while the shank of the hook would keep a true line with the gut. For the present, however, the 'capital' danger must not be ignored.

Every knot, again, is a weak point in the cast; especially if tied in a hurry or not carefully soaked before use. A couple of spare collars which have lain in the slop basin during your breakfast may be carried round your hat with great advantage. Apart from an utter smash by bough or root—which is never impossible if you are in a hurry—it is often less troublesome to change the whole collar than to repair a trifling damage.

Having now dismissed the preliminary question of strength, I find myself face to face with the extensive and complicated subject of flies considered as lures; of the best flies for use, and the circumstances under which these or some of these will be found most useful.

To this subject no single essay can do justice, owing to the number of flies which have a recognised value only within a limited district. But in order to deal with it at all, one must first encounter that *quæstio vexatissima*—Whether artificial flies, generally speaking, are imitations of some particular insect, for which they are taken by the fish, or nondescripts (to borrow 'Ephemera's' form of expression) which are seized only on account of their general appearance of life. The former position is generally maintained by English authors on fly fishing; the latter by brethren of the angle north of Tweed, or among the mountains of North Wales. Now, that the artificial fly

should in general be an imitation, and on clear and often-fished waters a very close one, of some particular insect, I have no shadow of a doubt; nor do I believe that anyone who has fished in the Derwent, the Driffield water, the Teme, or the Itchin, will hesitate to agree with me. Again and again have I found the 'March browns' supersede every other fly early in the season, when the natural insect, which I had imitated most carefully, floated on the water by thousands; nor do I doubt that at such times Mr. Bainbridge's advice, to fish at once with three March browns slightly varied in tint and size, is most judicious. I have seen in like manner the little 'iron-blue' on a cold morning strong on the water, when I could not stir a fin with any other lure. The day warmed—a shower softened the wind—and the recent favourite was a useless appendage to my line; while a larger, gayer insect, visible on the water, warned me, not in vain, that the 'yellow dun' must now be taken into council. How often, again, in July and August, do the artificial fern fly and ant fly—killing through the sultry hours while the natural insects are also conspicuous—give place towards evening to that late-fluttering tempter the red-spinner, whom I have dropped on the water scarce distinguishable among his living likenesses!

The green-drake,[1] again (better known perhaps as the 'May fly'), is a strong case in point. It is on the water little more than a fortnight, a large and 'ken-speckle' insect, and throughout that time it is very difficult, during the hours of its appearance, to induce a trout, in the streams where it is bred, to look at any artificial fly save a palpable imitation of this beautiful creature. To complete the argument, the same imitation is utterly useless on those English streams which do not produce the real insect.

Again, the experienced fly fisher will acknowledge the fact, that what the initiated call 'palmers' are taken, especially in

[1] It may be worth remark that, on the lakes of Westmeath (in this point very unlike those of Scotland), the May fly has its killing period, and, as in England, kills almost to the exclusion of every other fly.

swollen waters, in every river, and from the beginning to the end of the trouting season. Surely it is more than a mere coincidence that the rough caterpillar, or palmer worm, which these lures accurately resemble, should also be astir during full six months of the year, and be continually sent down the stream when a sudden rise of the water washes its margin?

To these examples, which I cited in favour of the 'imitative' theory nearly thirty years ago, I will add two or three more drawn from subsequent experience or overlooked at that time. There are certain flies tied in deliberate imitation of female insects carrying at their tails a ball of eggs to be dropped one by one in the water. I will instance two of these—the 'Grannom' or 'Greentail,' and the 'Governor.' The grannom—I speak now of the natural fly—is a reddish brown insect, not uncommon in the bushy reaches of many southern streams. It flies high, however, and so rarely touches the water that no artificial copy of it is in common use. But when the female fly develops her *ova* and is about to shed them she hovers close to the surface of the brook, with a green ball behind her, which may in more senses than one be said to wait upon her latter end. For as she drops egg after egg on the water, the eyes of hungry trout are soon attracted to her movements, and in some luckless moment of contact with the water she, with the portion of her rising family not yet launched on the world, disappears down a fish's gullet.

Now towards the end of April or beginning of May—for the breeding season of insects depends greatly on the weather—I often use the grannom fly, sometimes with signal success. But I have never done any good with it except during the few days when the female insect with her queer green appendage was actually visible on the water. The 'Governor' again—which should rather have been styled the 'Governess'—with its broad band of orange silk at the tail, represents another female fly generally seen on the water towards the end of July, conspicuous by a ripe cluster of orange-coloured eggs. Many practised anglers know nothing of this fly, but I have had the

luck to use it occasionally when the natural insect was strong on the water, and it was taken in preference to anything else. I may add that the heaviest take of large trout which ever came to my knowledge—though, alas! I was not the captor—was made with this fly on the upper waters of Foston Beck, now in the hands of Colonel St. Quentin.

I might fairly rest my case on these two instances, in which the peculiarities of the natural insect during one brief phase of its existence are reproduced with such effect in the artificial fly. But I cannot pass by the 'local value'—to borrow an artist's phrase—of certain flies tied in imitation of insects unknown beyond a limited district. Every Devonshire man knows the virtues of the 'blue upright'—a dusky, smooth-bodied fly, varying from pale slate colour to a dead black. It holds, in fact, on Devonian streams much the same place as the murderous 'blue dun' with its downy body in a great majority of our English counties. Now on my first introduction to a Devonshire stream I noticed great numbers of a slender, active insect which had no representative in my fly book, and which I felt sure I had never seen before. But a local artist soon supplied me with the imitation I wanted, and since that time I have killed more trout in Devon with the 'blue upright' than with any other fly, and have seen the natural insect on every stream I have fished in that land of brooks. Surely this is more than a mere coincidence.

All this is so obvious, that my readers may ask how anyone could ever propose to question it? Yet in defence of the Scottish 'nondescriptarians' it should be said that they can tell of experiences much at variance with those on which I have built my inference. I have fished in some forty Scotch lochs or tarns, rarely without fair success, sometimes with brilliant results; yet where the *Salmo fario* alone is in question, I have but half a dozen flies on my list for active service. Of these half-dozen two only, and those by no means the best, resemble any natural fly with which I am acquainted. I do not pretend to explain this fact, nor what mysterious harmony between a

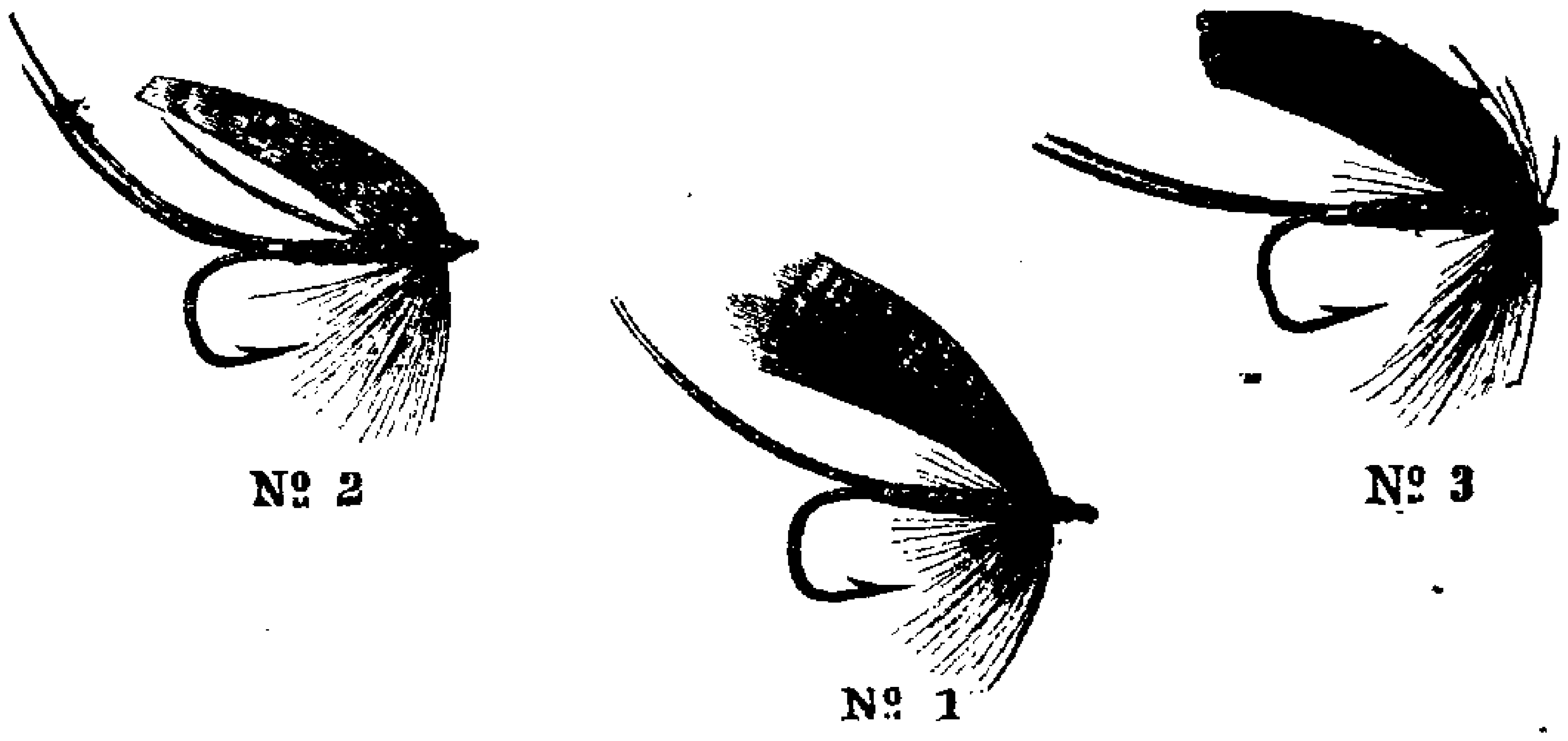
particular wing feather and a body of a particular colour renders their combination irresistible to the trout in so many lochs of the most dissimilar character. Still less can I tell why in one loch there is a standing *furore* for smooth silken bodies, in another for rough mohair and swine's down of the identical colours. Yet I have seen this deliberate preference for one or the other material proved beyond a doubt again and again. These and the like problems continually recur, and contribute to make fly fishing the intellectual amusement that many wise and observing men have found it. At the same time they warn us to beware of sweeping generalisations, and to gather our facts from a great variety of sources, ere we generalise at all. It is certainly curious that a dear relative, whom I 'coached' in the rudiments of fly fishing ere he became himself an authority on the subject, lays his qualified rejection of the 'imitative' theory at my door. I recommended to him my three favourite lake flies for use on a Scotch tour, and he found them so effective that he had them reproduced in various miniature forms for general use, and has certainly killed fish with them in waters where, from my own experience, I should have trusted to a very different cast. This, I admit, is curious; but it does not really affect the argument. To give it any logical weight we must beg the question of less or more; must assume that the system which was not tried would not have proved comparatively successful.

With this remark—which furnishes an answer to many fly fishers whose practice is better than their theory—I may dismiss this first of piscatorial *cruces*.

Having been for many years the willing victim of numerous applications for pattern flies on the part of friends, acquaintances, and even strangers bound for this or that fishing district, and having in a great majority of cases received the thanks of those who consulted me for the success of my prescriptions, I may be forgiven if I claim to speak with such authority as is due to long experience on the subject of Trout Flies for lake and river. For lake trout I have found, as already stated, that a very few

flies will answer every purpose, and I doubt very much whether three better patterns can be found than those recommended in the *first* edition of 'The Moor and the Loch.' With two of these I had been familiar before I read Mr. Colquhoun's work, my knowledge of the third—which has helped me to many a heavy basket—I owe entirely to his pages.

Without further preface, I will now describe six lake flies which in my opinion will meet all the requirements of the practical angler. They were all carefully dressed to my patterns by Mr. Charles Farlow.



1. Brown drake wing and tail, dark red hackle, orange body. This is, in fact, a 'professor' with a warm wing.

2. Grouse wing and tail, slate-coloured hackle, dark green body.

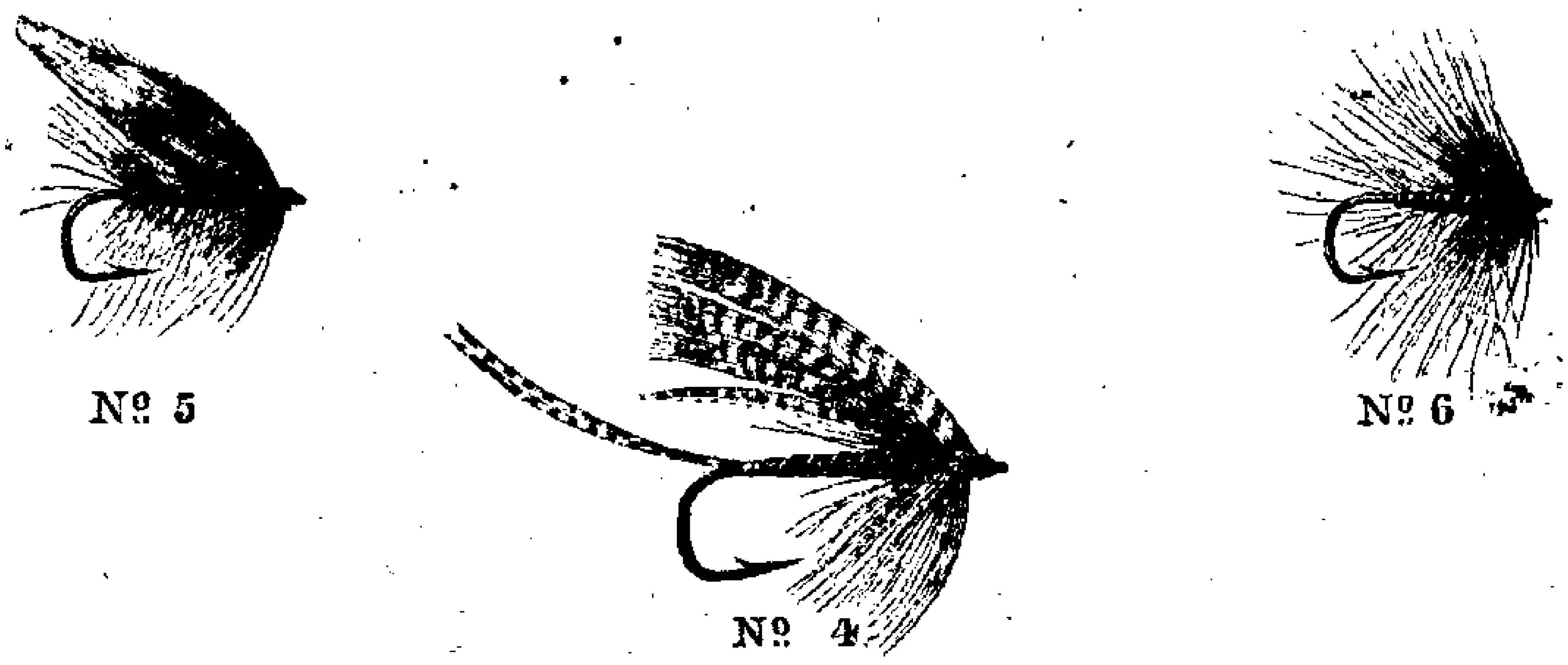
3. Jackdaw wing and tail, black hackle, claret-coloured body.

4. Strongly barred black and white teal wing and tail, bright red hackle, pale green body.

[This fly—if my memory serves me—was named 'Green-mantle' by the author of 'The Rod and Gun.']

These four flies—the first three being in my opinion decidedly the best—I consider indispensable for loch fishing. The size of the hook, the material of the body, and the amount, if any, of gold twist ribbed round the body or forming

a cushion for the tail, may be indefinitely varied, but the colour of the wings and legs needs no variation. I should class them all as 'nondescripts,' because, though bearing a general resemblance to insects occasionally seen, I have never caught on or near a lake a fly of which any one of the four can be fairly called an imitation.



Nº 5 Nº 4 Nº 6

5. Bright red landrail wing, yellowish red hackle and body. This fly is, I think, improved by a second hackle with some fine gold twist carried palmer-fashion down the body. Without this adjunct it closely resembles a red sand fly, larger and brighter than usual. I employ it only in lochs such as Ericht or Fruchie, where there is a fair sprinkling of char, for which loveliest of *Salmonidæ* it seems to have a special attraction, particularly if you sink it deep and move it slowly.

I was much struck a few days since by a passage in Mr. Black's 'Yolande,' where his hero casts expressly for a brace of char. He has perfectly worded the results of my own experience.

6. A wingless fly; black hackle, shoulders ostrich herl, body of warm orange silk. This fly I have occasionally found most killing, especially in rocky tarns, and in mountain streams with a bed of rock and stony gravel. I believe it represents a black-sharded, orange-bodied beetle frequent about such waters. I have named it 'Chaloner's Pet,' in honour of the inventor, a frequent angling companion many—can it be fifty?—years ago, and whom I still rejoice to hear of as wielding a deadly rod on Loch Awe.

A large alder fly, dressed as described at p. 293, might perhaps be added with advantage to the above list.

So much for lake flies.

The flies required for our British rivers and brooks are far more various, and depend for their success on minuter details of colour and material. Nor can any amount of general experience make the fly fisher perfectly at home on a new river, though it will prevent his feeling quite strange. I have killed trout in 130 streams (to say nothing of 50 lakes); but still, on water which I visited for the first time, I should be glad to take a hint as to the style of fly to be used for the nonce from any intelligent 'local practitioner.' The man of one stream, like the '*homo unius libri*,' is a formidable person within a limited range. On the same principle constant readers of sporting papers may benefit greatly by the recorded experiences of brother anglers on particular rivers. And I would recommend fly fishers, who have sufficient leisure, to 'book' accurately not only their captures but a brief record of the flies which on each occasion served them best, in order to prevent the results of their own experience from eluding their remembrance. Such a record is not the formidable affair it might appear at first sight. Three minutes at the close of the day will answer every purpose. I have been a working man all my life, and have, I believe, at least an average memory; yet I do not regret the time which, after every angler's holiday enjoyed during something like half a century, I have given to brief entries such as the following:

July 5.—Upper Ledditch. Warm day—light S.W. breeze. Red sand fly; orl fly (hackle) and *dark* coachman. Weight 10½ lbs. Best fish 15 oz.

By keeping such records one guards against false impressions as to the season and the weather when a particular fly did execution on a given stream; impressions which will often lead us wrong in our choice.

I shall not attempt any scientific classification of flies. But though I do not pretend to the character of an entomologist, it may be useful to beginners to remark that there are two great

families of flies to which the fly fisher's imitations chiefly belong: (1) *Ephemeræ*, (2) *Phryganeæ*. The *Ephemeræ* include a great variety of species, from the May fly to the tiny Jenny Spinner. They have a long life in the water as larvæ in the form of little green dragons, crawling about the roots of sedges and water weeds; and a very short one as perfect insects, having their 'little day of sunny bliss,' during which the sexes mingle and the females drop their ova on the stream.

Under certain conditions of the weather they 'hatch out' from the larva state in prodigious numbers, leaving their empty skins, like insect ghosts, on rushes, flags, or waterside grass. I was once witness at Bray Weir early in July to a singular phenomenon in the shape of a countless swarm of 'Yellow Sallies.' They gathered over the Thames shortly before dusk, and formed a dense yellow cloud extending some 150 yards in length, 30 in breadth, and 3 in depth; only a slight undulating movement in the mass, and the restless flashing up of scale fish from below to secure the stragglers who dropped out of the ranks, showing that what I saw was a prodigy of insect life and not an atmospheric phenomenon.

The artificial flies which represent the *Ephemeræ* are very various in size and colour; but they are all alike in attempting to represent by the most delicate feathers—for the most part mottled—the gauzy wings of the natural insect. They are also alike in having three 'wisps' behind--single strands of hair or feather—to imitate the delicate filaments at the tail of the natural fly, which seem designed to steady and regulate the up-and-down movements of the insect, especially in the act of dropping its eggs. The feathers most used in dressing flies of this family are those of the wild drake (dark brown, pale grey, or dyed yellow); of the starling, landrail, snipe, and dotterel.

The *Phryganeæ* are a less numerous family, nor, as far as my own observation goes, do they ever appear on the water in such amazing swarms. They often, however, muster pretty strong, and certain species are continually 'hatching out' during a great part of the year from the bundles of vegetable

matter whence their name of 'faggot insects' is derived. The maggot-like larvæ form for themselves cases for shelter or security in which they dwell for many months before they quit the water and take the air as flies. They carry their wings when crawling—which they do much more freely than the *Ephemeræ*—not raised in pairs above the thorax, but folded pent-house fashion above the abdomen. The larvæ are commonly known as 'caddis' or case worms, and the abodes they construct for themselves, partly by the use of their strong nippers and partly by the aid of some natural glue furnished by their own bodies, exhibit a curious and interesting variety. These 'cases' ascend by a graduated scale from the simplest to the most complicated forms. First we have an inch of slender rush; then a more solid tenement formed from a piece of stick, in which the grub takes the place of the pith; then two leaves gummed together at the edges. Anon we find a fasciculus of tiny twigs, or a small clustered pillar of rush-rods, cut accurately to one length and curiously joined together. The most beautiful of all are cylindrical grottos, sometimes nearly two inches in length, formed of small fresh-water shells. A studious entomologist who was also a fly fisher might do worse than to make a collection of these ingenious dwellings and figure the 'imago' hatched from each. It would, I presume, be found that each class of dwelling belongs to a different species. I have found many kinds together in one spring ditch or sedgy backwater, so that there must have been a choice of material, though I cannot affirm that when I have dislodged the inmates for bait I have noticed any marked differences but those of size and colour.

It would be a curious experiment to transport a large number, say of the rush worms, to a stream where they would find no rushes, and then to observe whether, after the flies had hatched and bred, their progeny would disappear or would protect themselves by adopting some new building material.

But I am digressing. Let me return to my fly book, and say that the artificial flies representing the *Phryganeæ* have

mostly mottled brown or dusky wings, with dark legs and brown or yellowish bodies.

A third class of artificial flies—taking the term in its popular acceptation, without regarding the palpable misnomer—includes the palmers or rough caterpillars and the beetles. These may be usefully classed together, as they are formed of similar materials (the cock's hackle being generally dominant in both), and used in much the same states of the water. To these three distinct classes I would add for convenience a fourth or 'miscellaneous' class, comprising a great variety of insects not distinctively aquatic but occasionally attractive to trout and grayling.

I begin my list with the flies which I have found most useful all through the year on a great variety of waters; purposely limiting the number, in order that anglers who trust the results of my experience may, in the stocking of their fly books, avoid that *embarras de richesses* which will lead them to perplexity at the outset and useless changes in the course of a day's fishing. It should always be remembered that the fly is often blamed for the mood of the fish, and altered perhaps just when they are beginning to feed.

1. *The Yellow Dun.*—This fly is good throughout the trout season, and is taken freely by grayling in August and September.

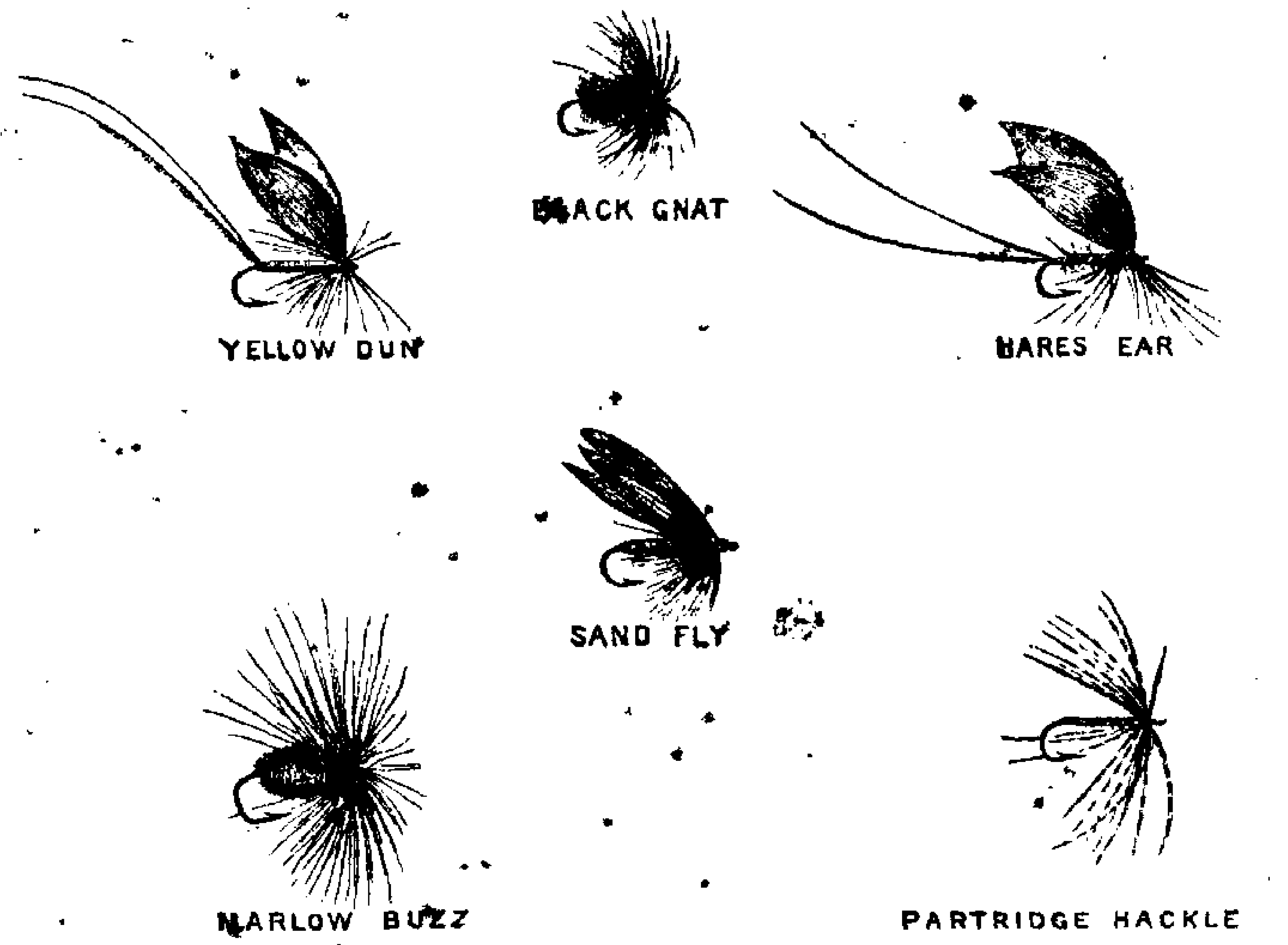
2. *The Hare's Lug.*—This is the form of the blue dun with which I have done most execution through the year. In Wales, Scotland and the northern counties of England I prefer it to No. 1.

3. *The Marlow Buzz*, or Cockabundy (a corruption of 'Coch-y-bonddu').—This not only makes the best of droppers in rough mountain and moorland streams, where it is indispensable, but if tied very small and dark may be depended on in the clearest streams—those of Hampshire, for instance, or Derbyshire—especially when there are but few *Ephemeræ* on the water.

4. *The Red Sand Fly.*—I have found this fly very killing

from April to September in various rivers; more so, however, in the midland and northern than in the southern counties. There is a small *ephemera* closely resembling it in colour, for which no doubt it is often taken. It kills best when tied with a body yellower than the landrail wings.

5. *The Black Gnat.*—This is generally considered a summer and autumn fly, and it is certainly most deadly just when the May fly has gone off. But if it be dressed, as I would have it, either with a dark wing or simply with black hackle

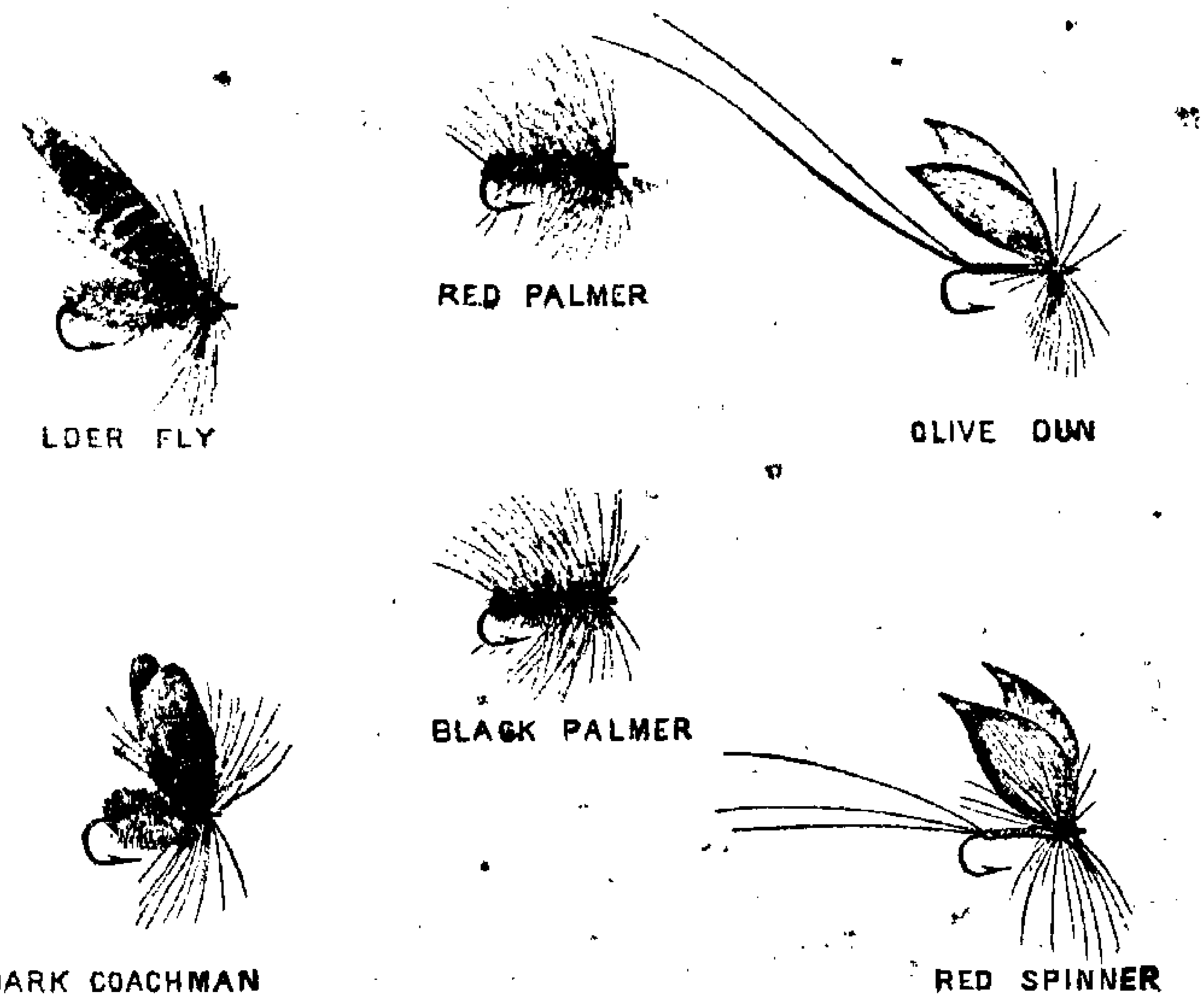


and ostrich herl, it will take well in spring—passing doubtless for Walton's 'black hawthorn fly.'

6. *The Partridge Hackle.*—This fly is rarely noticed by writers, but I have found it most useful throughout the season especially as a drop fly. I tie it with a soft-stemmed, dark mottled feather and an orange silk body; but I can hardly call it an imitation. It most resembles a large grey-winged gnat like a miniature daddy-long-legs, which is often to be seen on waterside herbage; but it is certain that good trout take it freely in all weathers, whatever they take it for!

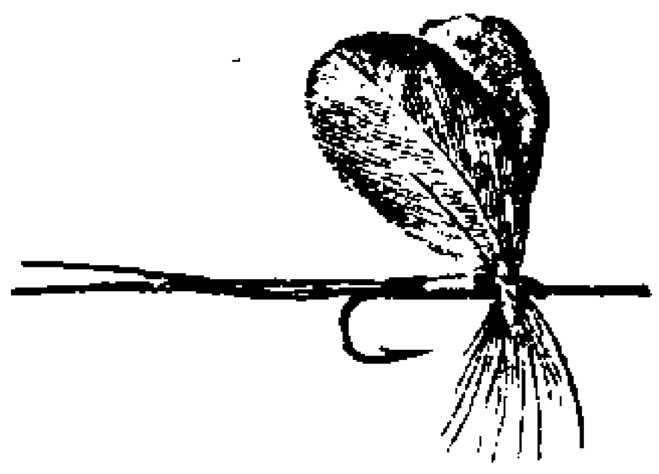
7. *The Olive Dun.*—I have used this fly less than its excellence deserves; but I know that it is A 1 in the chalk streams in any but very cold weather, and believe that there are few English waters in which it will not take.

8. *The Alder Fly.*—This fly kills well after the leaf is out especially where the alder grows freely. The body is always of peacock's herl—the legs should be of a dark dun hackle. When it is tied on a large hook it wants a dark mottled wing, for which I prefer a brown drake or night-jar feather.



9. *The 'Dark' Coachman.*—As far as I know (but my study of books on Angling ceased some twenty-eight years ago) this is a hardly recognised fly; but it is very useful, especially in western counties, and where trout and grayling are found together. It is simply the ordinary coachman—much used on summer evenings—with a starling's feather substituted for the white wing commonly in use. It is deadly in brooks throughout the year.

Add to these flies a Red and a Black Palmer (the former ribbed with gold, the latter with silver twist), for use when the water is beginning to clear after a spate, and you will be 'armed and well prepared' under ordinary conditions in an immense majority of British streams. I speak with some confidence on this head, as for many years I noted the flies with which I killed on each angling holiday, and still continue to record any new experience. The eleven flies named above—adding the Red Spinner (whereof hereafter) to make up the dozen—have certainly been answerable for fully three-fourths of my captures in brook and river.



JENNY SPINNER

MARCH BROWN

IRON BLUE

Let me now say a word of the flies which, unlike those numbered above, have but a short reign, though for a time they can hardly be dispensed with. Of the March Brown and the Green Drake, which at once suggest themselves under this head, so much has been written, and in such detail, that I might fairly say, in the words of the briefest epitaph I ever read, 'Silence is wisdom.' I do not profess to be an authority in either case as to the much-discussed niceties of feather or colour, and will merely remark that in my own experience I have found both insects work better as hackles than as wing flies, and prefer them tied a shade under the natural size.

The little 'Iron Blue' is a very killing fly on cool April

mornings, and will take occasionally on cold days up to Midsummer.

The 'Jenny Spinner,' a still smaller and more delicate insect, appears at odd times on warm evenings, and will then kill in the lowest and clearest waters.

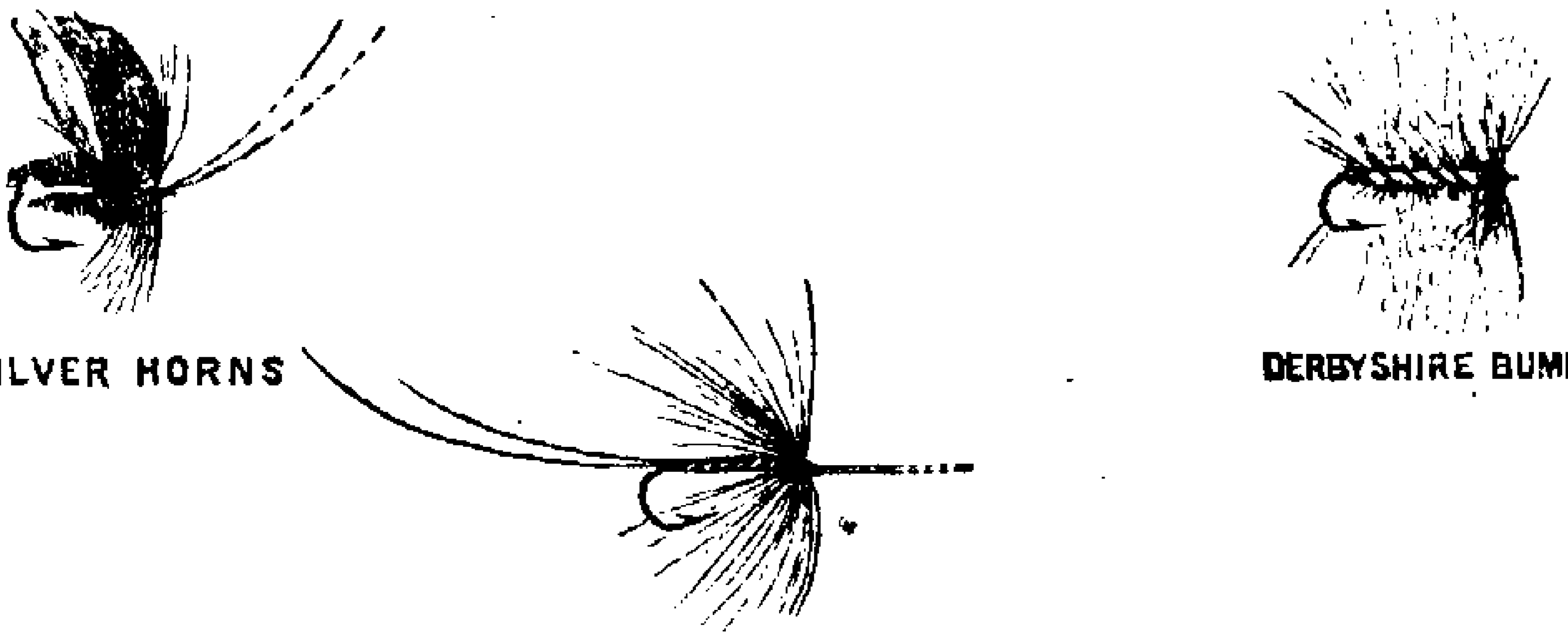
The Fern Fly I have found very taking, even at noon on sultry days in July and August; but rather in still pools than in streams, and only in the neighbourhood of bracken.

The Red Ant Fly comes in very late—generally in September, when emmet flights are commonest—and is therefore rather a grayling than a trout fly. This fly, as also the Fern Fly, is figured in the list of grayling flies. In spite of its peculiar form, I have found the 'Dark Coachman,' tied small, an effective substitute for it. But of all flies which are not 'permanent,' like Miss Nipper, but 'temporary,' commend me to the Red Spinner. In warm evenings, far into the dusk, I have found it the deadliest of lures from June to September. Its whirling flight and its colour make it conspicuous; but it figures in my evening cast whether I have seen it on the wing or not. Oddly enough, I killed my best fish with it in Tasmania. The fault of the ordinary imitations is that the bodies are of too crimson a tint. If you qualify the pure red, let it be with a little golden brown.

I might add to this list, but, after all, the real question for the practical angler is not so much how many flies he can utilise as how many he can safely dispense with. I have now only to notice a few important flies which have a purely local value, killing in one district, but being of little use beyond it. Lists of this kind are dry reading at the best, so to avoid tediousness I will name only three. The Blue Upright—mentioned already—is absolutely indispensable in Devonshire. It varies much in the tying as to size, build, and shade of colour; its one constant characteristic being the hard smooth body. For general use I prefer it without wings, tied with a black hackle, not too stiff, and a slate-coloured body.

The Silver Horns I have found very deadly in Salop and

Herefordshire from the beginning of June. The natural insect is a small moth, glossy black, with very long black-and-white horns, easily imitated with a strand of a teal feather. It is very conspicuous on rank waterside herbage, and I rarely fail to use the imitation along sedgy reaches. Finally, there is the Derbyshire 'Bumble.' Of this queer fly I know nothing, save that I have killed with it, and have seen it successful in the hands of local anglers about Bakewell, Rowsley, &c. I have seen it tied with all manner of colours, but always with a fat body of smooth floss silk, ribbed with some bright short-stranded hackle. Its special oddity lies in its plumpness.



SILVER HORNS

DERBYSHIRE BUMBLE

BLUE UPRIGHT

Seen in contrast with the ordinary Derbyshire flies—slender and almost midge-like things—it looks like Major Monsoon among a squad of light horse. What is it taken for? Not the veritable bumble, surely, which a trout rarely meddles with, and if in a whimsical mood he sucks it in, eschews without chewing. The 'great representative principle' seems quite at fault. Can it be meant for one of the local *Coleoptera*? Beetle—beadle—Bumble! A plausible derivation.

Having now given some general hints as to the best mode of fishing a stream, with some practical suggestions as to the choice of flies, I find that there is a good deal yet to be done ere the particular fish whom I have in my mind's eye takes up his proper quarters in the basket. My fly or flies are such as

ought to kill—whether they will do so, or be wasted as good meat is by a bad cook, depends on the handling of my rod. I have yet to throw over the fish, to hook him, and to play him when hooked. I would say a word on each of these processes, and do not despair of advancing under each head something at once new and true. This would be scarcely possible had writers qualified their general rules by drawing the requisite distinctions. We are told, for instance, to throw a perfectly straight line, that we may reach the farther and strike with the greater certainty, and I admit the general principle. But on a bright day and in a much-fished stream, such casting will not serve your turn, unless you aim at reaching an individual fish. Rather shake out your flies loosely, with a quivering motion of the rod, and let your links of gut drop lightly, in irregular undulations. The greenest trout, under such circumstances, takes alarm at a 'straight line' drawn across the surface of the water. Bear the same consideration in mind when working your flies down and across the stream.

Again, in throwing for a fish whose exact position you know, all the books tell you to cast two or three feet above him, and let the stream carry the fly down to the expectant trout—a good rule doubtless, for the general guidance of a tyro, but for the more advanced piscator, in sultry weather and bright shy waters, in place of 'feet' he may safely read 'inches.' It will not do *then* to let an old trout scan and study the insect approaching him. Drop the fly 'reet ower his neb,' as a young familiar of mine at Driffield used to phrase it, and ten to one, having no space for reflection, he will 'take the death' on the impulse of the moment.

Connected with the first dropping of the fly is the working of it on and in the water. Drawing it straight along, especially up stream, though common, is a ruinous error. In salmon fishing this is well known: the line is slackened at short intervals between the sweeping movements of the fly across and against the stream; and the lure is made lifelike and attractive by the alternate contraction and expansion of the

fibres forming its wings and legs. Let your trout flies be played upon a similar principle, but more variously, and more down stream. Let the tail *fly* seem struggling in vain to resist the current which carries him down, and the near dropper dip enticingly as if in laying eggs. A tremulous motion of the wrist is sometimes most alluring. In the stillest waters, on a warm day, I have killed good fish by throwing far, and then suffering my whole cast to sink ere I moved my flies. Trout will take them thus sunk if they do not see the ripple of the line at the surface.

We will now suppose your fish to have risen—the next point is to hook him, if indeed your line is not so taut that you feel he has hooked himself. To do this you must 'strike,' as the common term is ; which has been correctly, if not satisfactorily, explained as 'doing something with your wrist which it is not easy to describe.' Is this 'something' to be done quickly or slowly, sharply or gently? Not to distinguish too minutely, we would say, strike a salmon more slowly than a trout, a trout than a grayling, a lake fish than a river one, and, generally speaking, a large fish than a small one. As to the degree of force, a gentle twitch generally suffices—at all events, more is dangerous with any but very strong tackle.

Note especially, that in order to strike quick, you must strike gently. This requires illustration. Lay your fly rod on a long table, place a cork eighteen inches in front of the top ; grasp it as in fly fishing, and strike hard, making the butt the pivot. The cork will be knocked off by the *forward* spring of the upper half of the rod before any backward action can take place, and thus much time will have been lost before the line can be in the smallest degree tightened.[1] Remember, too, the great increase of risk to your tackle when the line is thus slackened before sustaining a severe jerk. Nine fish out of ten

[1] The remark naturally suggests itself that, if so, a strong forward movement from the butt of the rod, by producing a reverse action at the point, would be the quickest mode of striking. And this is mathematically certain ; but a trout so hooked would be immediately released by the slackening of the line when the backward reaction took place.

that are said to break the casting line are in fact lost by the eager violence of the striker, acting upon dry or ill-tied knots. I could say more on this subject, did space permit. Thus much, however, as a parting precept. Never be in a hurry, especially when you see a good fish rise. Take your time, as he will take his, and the result will not disappoint you.

Our fish is now hooked, and the next question is how to deal with him. Some of our angling friends call this 'working a fish,' some 'playing'—the former term, perhaps, having an objective, the other a subjective reference. Nevertheless, Halieus must sometimes work very hard, or Salmo will have the play all to himself. Two general principles may be laid down: first, the strain kept up on the fish should be the greatest attainable without overtaxing the strength of the tackle—which should be a known quantity—or the *hold* of the hook, which the most experienced angler cannot always calculate accurately; secondly, the direction of the butt should never make an obtuse angle with the line—in most cases a decidedly acute one. As for 'showing a fish the butt,' it is very desirable in general. But if you do so when fishing with a single-handed trout rod in a deep stream with hollow banks, you only aid that inward rush of your fish which is but too likely to wreck your tackle. Never bring your fish to the surface till he is quite spent; he may break the hold, if not heavy enough to break your tackle. Don't go trouting without a landing net, whatever certain writers of the rough-and-ready school may say. And if you have an attendant,[1] don't let him land your fish till you know that you can fully trust him.

Thus far I have dwelt wholly on what may be called the destructive side of the fly-fishing question, and have tried to show how the accomplished professor of 'Fine and far off' may

[1] [In many places, especially in Ireland, it is most difficult to get an attendant to stand still and allow the angler to bring the fish to him. Rushing down to or into the water with landing net or gaff is fatal, and loses many fish.—ED.]

surmount obstacles and profit by opportunities in the filling of his creel. But as the number and the skill of our fly fishers are continually increasing, the question still remains how the breed of British *Salmonidæ* can be kept up to meet the growing demand. Every true brother of the angle who pursues his pastime in a liberal and unselfish spirit ought, therefore, to direct his attention to the breeding and feeding of these fish, valuable as they are at once for sport and for the table. And it is important at the outset to draw attention to some conditions of this twofold problem which seem to be but imperfectly understood.

In the first place, the fact must be recognised that it is easier to keep up the number than the size of the trout in our best streams. Modern agriculture with its demand for thorough drainage tends to diminish the ordinary volume of water in our brooks and rivers. Fifty years ago, when there came a heavy spell of wet weather a great extent of spongy moor and meadow land along the watercourses imbibed and held up a large proportion of the rainfall. The spate came less suddenly and lasted longer, and in ordinary weather the banks continually gave out water to keep up the stream. Now it is either 'a feast or a fast.' The well-laid drains flush the rain water rapidly into the streams; the floods come down sooner and last for a shorter time, and the ordinary level of four-fifths of our trout rivers is very much below what it used to be when agriculture, though more thriving, was less scientific.

This diminution in the volume of water means, of course, a reduced supply of insect food for our trout. Nor is this all. Farmers and millers combine in many districts to keep the weeds close cut, and every weed-cutting destroys by wholesale the larvæ of those insects on which the trout depends most for his ordinary food. As I walk along some well-known beck and see huge heaps of water weed drying in the sun, I feel sorely tempted to use a naughty word when I think of the millions of possible *Ephemeræ* which have 'closed their little being without life,' hopelessly entangled in the ruins of their green abodes.

I know more than one trout stream where the May fly has disappeared within the last ten years, and have heard of sundry others. Of course this implies a diminution of the average weight of the fish in such streams, supposing their number the same. A fortnight's steady feeding on the grey and green drake used formerly to produce a marked improvement in the weight of the trout as well as in the colour of their flesh, so that those taken in the latter half of June with the black gnat or red-spinner were altogether a 'superior article.' Now, the larger fish are not at their best till the end of July or beginning of August, and the number of those which never get into condition during the fishing season, but remain, like the Ancient Mariner, 'long, and lank, and brown,' is steadily increasing, except in a few favoured reaches where there is a good depth of water with a strong sedgy border. I may remark by the way that the *Phryganeæ* appear to suffer less from excessive weed-cutting than the *Ephemeræ*; doubtless because their larvæ crawl about more in open spaces, and, from the protection afforded by their 'cases,' are better able to extricate themselves when hauled ashore in a mass of weed. The orl flies and caperers, for instance, keep their ground better than the more delicate flies of the *Caddis* family.

Reverting now to what I have called the twofold problem of breeding and feeding an increased stock of trout to meet the increased demand, I may state without hesitation that the difficulty in breeding fish in sufficient numbers will be far more easily overcome than that of feeding them up to a respectable size and condition. No doubt the shrinking of our brooks already alluded to has damaged many of the best spawning grounds, and exposed others in an increasing degree to the depredations of that worst class of poachers who destroy the fish on the redds. But, on the other hand, artificial breeding has for some years past been better understood and more extensively practised in the United Kingdom; and though we are still far behind the United States—and probably behind Canada—in this department of pisciculture, yet I think the

Fisheries Exhibition certainly gave a stimulus to trout breeding which will not only keep up the tale of fish in well-stocked waters, but restore a fair head of trout in streams whence they have almost disappeared. An interesting article published in the 'Standard,' on the breeding establishment at Howietown, shows that by the judicious outlay of a very small capital, millions of small fry may be yearly brought into the market at moderate prices and yet with a handsome profit to the breeder. We may, I think, assume that for the future there will be little difficulty in obtaining any reasonable quantity of stock trout from this and similar establishments. The chief question for the purchaser will be what size of stock will pay him best.

For a preserver who has, in connection with his own trout stream, the requisite appliances for 'hatching out' eyed ova, or feeding baby fish just freed from the umbilical sack, trout, in one of these two stages, will probably be the best investment. But for turning directly into the river the stock should be yearlings not less than five inches in length. They are easily moved if two conditions be borne in mind. First, the vessel in which they are carried should be smooth within, to prevent bruising, which is apt to set up fungoid disease; and, secondly, the water should be kept in motion, aërated, in fact, to suit the breathing of the fish. This, indeed, is the one indispensable condition for keeping the trout, in north-country phrase, 'wick and heerty' on their journey. The late angling editor of the 'Field' told me, as the result of his own experience in transporting fish, that he knew no better vessel for the purpose than the ordinary glass carboy used for chemicals. Its merit, I presume, lies in the perfect smoothness of the interior. Such a vessel, however, is fitted only for a *small* live cargo. As the removal of trout in large numbers becomes a more familiar process, we shall doubtless see in general use travelling tanks much like a modern watering cart, but provided with mechanical means for keeping the water in motion.

My attention was first drawn to this subject many years ago, long before I had discarded the spinning minnow for the fly.

I used to carry about a score of live minnows in a commo soda-water bottle—just the glass carboy on a small scale—which I planted neck upward in my creel, with a notch in the side of the cork to permit free change of air. They never ailed anything[1] as long as I kept moving; but if I sat down for a meditative weed—and where can this be better enjoyed than in a shady nook by the waterside, 'Propter aquæ rivum sub ramis arboris altæ'?—every minnow—out of pure cussedness as it seemed—would sicken in five minutes, and if I failed to notice the first symptoms would be 'an unpleasant demp body' in a quarter of an hour. Like minnow, like trout.

Some twenty years later, when I had been long familiar with the causes which made repose so fatal to my bait fish, I was actively engaged in a society for preserving the Thames about Marlow. Systematic poaching had made such havoc with those fine streams that a Thames trout had become a rare and almost legendary fish; and when we had put down our poachers and properly staked the 'ballast holes,' where they murdered our fish with the casting net, we found it necessary to restock the river. I obtained a goodly lot of trout from a Buckinghamshire stream some twenty-five miles distant, and had them brought to Marlow by no better conveyance than open tubs in a common cart, with floating boards to check splashing. The road was luckily a rough one, and the driver had strict orders—to say nothing of an extra fee—to keep continually at a jog trot, that the water might not stagnate. The fish all arrived at the Anglers' Inn, Marlow (long may it flourish!) in perfect health, though sundry of them were large fish, weighing from two to three pounds. Our committee were then sitting, and after a glance at the tubs I went back to join them, taking it for granted that the trout would be at once turned in below the weir, according to instructions previously given. But after

[1] This is not strictly correct. They did occasionally—though why on one day and not on another I could never ascertain—turn red, in which state they were less attractive. But I found that by putting a little river mud into the bottle I could prevent this change, or cure it when it had begun.

some ten minutes it struck me as odd that I had not seen any of the tubs carried past the window. Jumping up and calling to the rest to follow me I ran to the cart—not a minute too soon. Half the fish—and all the large ones—had already sickened and were gasping side up. We hurried them in hot haste down to the water, and the fresh stream just saved their lives, one fish only proving past recovery. Five minutes more of still water, and the whole cargo would have been lost; as it was, the introduction of those trout restored the breed which had become almost extinct in that fine reach of the river.

They were turned in, if I remember, about the end of August, after a season during which I could only hear of three trout killed by fair angling from Marlow Weir to Spade Oak. In the fourth season after, I took some forty myself, though hardly visiting the river twice a week.

I have told this story at some length to illustrate the necessity of keeping the water aërated by motion when stock trout are being transported; but it may point another moral, viz. that it is desirable to use sizeable fish for restocking exhausted streams.

Let me add here, that I am by no means fanciful about stocking water, whether pool or stream, with what is called a 'fine breed' of trout. Such a breed results from centuries, perhaps, of superior feeding, and trout of such a race, if removed to waters where the dietary is less generous, will be apt to 'dwindle, peak and pine,' or at best will lose their distinctive superiority. On the other hand, fish taken from a hungry water and turned into one where the bill of fare is more liberal cannot fail to thrive. I have seen many notable instances where tiny brook fish, which at home would never have exceeded four or five ounces in weight, have been removed into a large sheet of deep water, and have there become large and good—worthy of an angler's respect and affection. I will mention two examples. On a high moorland beside Lartington Hall, on the borders of county Durham, runs a small burn—the same which, after gathering its dark peat-stained waters, plunges down romantic Deepdale to join the Tees above Barnard Castle;

'scenes sung by him who sings no more.' On this moorland a large pool was formed, of perhaps thirty-five acres, its formation aided by the course of the burn. The moss-hags which had quaked along the winding banks of the streamlet were scooped away till the gravel below was reached, and the peaty soil was used to form a raised barrier round the extensive hollow, so as to deepen the waters still further. About five years after this artificial lake had been formed and stocked from the bit burnie that fed it, I had the permission of the owner, George Witham, Esq.—a name then well known in the scientific world, but my tale is some forty years old—to try the fly one summer's evening on its waters. I was very fortunate, either in my day or my choice of flies, or both; for though I had been told that the fish could rarely be coaxed to rise, I killed in a short evening's fishing, with my Scotch lake flies, eleven trout, of which the smallest weighed above a pound, the largest two and three-quarters.

I made a yet heavier basket in a rough afternoon the following year. Finer fish I have rarely seen, small-headed, hog-backed, and strong on the line. They took the fly in the grandest style; showing snout, back fin and tail, and coming *down* on their prey with such certainty that I missed but one fish in each day. The water, as well as parts of the bottom, being darkish, and the depth considerable, their outside hue was clouded gold rather than silver, but they cut as red as trout of the Thames.

I know a similar instance in a deep reservoir on the Brown Clee Hill, fed by a petty brooklet. The fish in the pool are Patagonians, and not more large than good—those of the brook of the small dimensions suited to their residence. Thus there is but one step between the two questions of breeding and feeding. A well-fed trout will, generally speaking, be a good trout, and a large range of water will supply its inhabitants with at least a respectable dietary. In this way mills do the angler good service; the fish in the mill dam have, so to say, a larger pasture, and mostly weigh heavier than those in the shallow reaches of the Thames.

The first and most obvious method, then, for counteracting the causes to which I have pointed as tending to reduce the volume of our streams and the amount of trout food which they supply, lies in deepening and widening portions of those streams. This can be easily done in many of our brooks, by raising barriers to hold up the water, and by enlarging and deepening portions of their courses at the small sacrifice of a few square yards of poor soil adjoining a natural hollow in their beds. The fish in the artificial pools thus formed will be better fed and consequently larger than those in the ordinary shallow course of the brook or 'pelting river'—to borrow Shakespeare's phrase —which favours the multiplication of trout but fails to supply them with abundant food.

Of course we must remember that trout water, whether pool or river, may easily be overstocked. In the course of a ramble through an unfrequented part of Lochaber, I once came upon a tiny tarn, fed by a burn which, though of the smallest size, afforded excellent gravelly bottom for 'redds.' I made a few experimental throws over it, and each time landed a fish on every fly. I added two small hackles to my ordinary cast of three, and had five troutlings hooked in as many seconds. I made a dozen more casts, and each time took five fish. They were so greedy that they *would* have the hook, so small that I had no difficulty in sending the whole quintett flying. Had I had any object in further slaughter—a feud with the cook at Inverlair, or an extensive contract for potted trout—I could easily, with the aid of my gillie to unhook the fish, have taken a thousand brace of these hungry fry in a day. Mine were perhaps the first artificial flies they had ever seen, for the tarn in question lies quite off the beaten track, though near Lochs Treig and Ouchan, which would have naturally attracted any wandering angler in those regions. But such a case of overstocking I never witnessed.

Within a mile or two, and on the same stretch of moorland, but at a lower level and where the depth of peat was far greater, lay another tarn of four or five acres in extent, which had no

'feeder' or possible breeding ground, and must have been casually stocked by some violent overflow of a neighbouring burn. I had heard of large trout in this, and tried it from mere curiosity, having never seen anything more dreary and unpromising, less like a Christian tarn than a reach of the Styx. I basketed five or six only; not that the fish were shy, but simply, as I fully believe, because they were few. They were all nearly of a size, above a pound and under a pound and a half; their outside colour pretty much that of a red Indian, and not unhandsome. But when sent up to table they proved simply uneatable, having the 'peat reek' so strong that I tasted one merely from a sense of duty, and dealt with the mouthful as Dr. Johnson did with the hot pudding—'A fool *might* have swallowed it.' Nothing better in flavour could have been expected from a mere turf hole, but the weight of these fish may illustrate what I have said of 'range of water' as conducive to size.

There are many large pieces of water, either altogether unused or given up to baser fish, which would carry a good head of trout. It is always assumed that these require running water, or at least a pool fed by a stream or spring. But if turned out young they will grow surprisingly in water absolutely stagnant but for a passing breeze or shower. I know a small pond in the East Riding with no feeder or outlet, much resembling the chalk ponds on the Hampshire Downs. It is irregular in shape, but in area about equal to a circle of thirty yards' radius; shallow at the margin, but deepening to a small island in the centre; the ground shelving towards it for some distance, so that a heavy rain soon tells on its level. Its ordinary inhabitants are numerous tench and gold-fish, with a few minnows of extraordinary size. Into this pond the owner, who is not only a skilful fly fisher but much interested in pisciculture, turned a few small trout from the Driffield Beck as an experiment. Two or three years after I often saw a good fish rising near the little island, and about four years after the stock were turned in one of them was taken weighing 4 lbs. 7 oz. I did not see the fish, but was assured that he was in good condition.

He was turned loose again after a hasty weighing; but he had seen his best days, and in the following season was finally drawn out a mere living skeleton. Under the circumstances we can hardly 'wonder a great trout should decline.' The wonder lay in the dimensions he actually attained.

In another case I stocked with tiny trout, caught with the hand from the very smallest of Kentish brooks, a little pool of about twelve yards by five, formed merely for picturesque effect in the beautiful grounds of 'The Hollands,' near Tunbridge Wells. Here there was a sort of feeder, but so small that an ordinary pitcher might during nine months of the year have received all that flowed in the course of a minute from the 'little Naiad's impoverished urn.' In the third year afterwards I tried the pond thus fed with extemporised tackle—a hazel stick, a line of Irish thread, and a glass minnow which happened to be travelling in my portmanteau. In less than half an hour I took two trout weighing $1\frac{1}{4}$ lb. each; both well fed, handsome fish, firm and pink-fleshed.

I mention these facts because I would fain see trout more generally introduced into ornamental waters. For instance, I feel assured that the sheet of water in Battersea Park, if judiciously stocked with small fish from a small stream, would carry a good head of trout, whose movements would divert many a toiling artisan, unused to any nobler fish than a half-grown rudd. There are many of our canals in which trout might thrive. Within a few fields of the Driffield Beck a notable example may be seen in a canal connecting the town of Driffield with the Humber. Oddly enough, the natives always call it 'the River.'

Some forty-five years ago, in very bad fishing weather, I wanted to carry home to Hull an extra lot of fish, and thought I would try the river head at an hour when, according to my experience, brook trout are hardly awake. I took a fair stock of minnows with me, and made my first cast in the morning twilight, soon after four o'clock. Between that hour and seven I got three and a half brace of trout, averaging more than a pound and

a half, and decidedly better fed fish than those usually caught in the Club water even at that date, when minnows and May flies still abounded. A finer dish I have rarely seen; but I was grievously vexed at not being able to beguile one 'most delicate monster,' weighing, I am sure, full nine pounds, who more than once followed my minnow but was too wary to take it. Two years ago I saw a seven-pound fish from the same water, in perfect condition, and I suppose a score or so of heavy fish are caught there yearly; but there has been a great falling off in numbers. The size and flavour of these fish I attribute to the abundance of food.

All along the course of the canal, and especially about the locks below which the trout are mostly found, the small scale fish seem to crowd the water, and one might fancy a trout revelling without effort in one perpetual feast.

If the Driffield folks had only enterprise enough to turn in, say, three hundred brace of stock fish every year, there would be more first-rate trout—first-rate both as to size and condition—caught in that short stretch of inland navigation than in an equal length of any English river with which I am acquainted.

There are doubtless other canals in which similar, though not equal, results might be attained. I remember formerly hearing of some good baskets made in one near Chirk. Of course, where there is a strong head of pike trout will stand but a poor chance; otherwise, a canal carried through a good trouting country ought itself to be 'troutable.' It is, I repeat, a mere question of food, which will generally abound in large bodies of fairly clear water.

No doubt the angler in a canal, or in one of those waste reaches of water which border so many of our railroads, must forego the poetry of his craft. Not for him are the '*liquidi fontes et mollia prata*'—the gushing streams and flower-enamelled meadows which contribute so largely to the enjoyment of a fly fisher's ramble by brook or river. Yet to an artisan escaped from the weary town on a long summer's evening or a rare holiday, his sport will bring its own enjoyment.

and even its surroundings, if not distinctly picturesque, will have a certain rural charm. The level line of water along which he plies his craft has at least its green fringe and its border of fields to rest and refresh his eye; and if along with a few fish for the 'missis' he can carry home a bunch of marsh marigolds or forget-me-nots, a yellow iris, or a spike of purple loose-strife for the 'kids,' he will be well pleased with his humble trophies.

Philanthropy in our England takes a thousand forms; an association for stocking the open waters nearest to our towns with the best fish they are capable of feeding would be a beneficent and popular novelty. And I feel sure that if ever the experiment be tried on a large scale, no little surprise will be felt even by experienced anglers at the ease with which trout will adapt themselves to waters apparently unpromising.

I have pointed out, under the general head of 'Flies,' the chief ingredients of that insect diet on which trout so largely subsist. But as that diet is, for reasons already mentioned, becoming scantier in many of our best streams, we should do well to study the means of supplementing it with other kinds of food. It is, I am afraid, useless to attempt restoring the larger *Ephemeræ* in waters whence they have died out, drainage and weed cutting remaining the same. The flies are too delicate to be fit for breeding after a long journey, and it would be difficult to obtain the larvæ in sufficient quantities to give the experiment a fair chance of success. As regards the *Phryganeæ*, there are some neighbourhoods where a few sharp lads might gather 'caddis' almost by the bushel for turning out in the adjacent trout stream. But this could only be worth while in a land of spring ditches and shallow drains, and even then it is by no means sure that the stock of flies could be permanently increased.

In streams where the trout run large much might, I think, be done by providing them with cheap fish dinners. A trout over two pounds weight generally becomes 'piscivorous' if he

has a chance, and never attains so large a growth as when he is abundantly supplied with minnows or other small fry. It is true that a kind of 'stall feeding' may be pursued with great success. About the year 1840, a distinguished officer informed me that at a Waterloo Banquet which he had recently attended there were served up two trout nearly of a size, from the preserves of Sir Home Popham, near Hungerford, which together weighed 36 lbs. These fish had been fed on chopped liver, and my informant assured me that no salmon could be better eating. But a few years afterwards I heard of a still heavier specimen, weighing 23 lbs. 7 oz., sent up to London from the same neighbourhood.

This, as far as I know, was the largest specimen of *Salmo fario* on record in the British Isles.

A fish of twenty-one pounds is said to have been caught in the river Exe. I remember the capture—with pike tackle—of one over fifteen pounds in Marlow Pool, and have heard of other fish from the Thames that weighed eighteen pounds. The Driffield Club used to exhibit a stuffed seventeen-pounder, caught in days when there was a periodical migration of countless minnows up the various feeders of the 'Beck,' pursued by flights of the small black-headed tern or 'carr-swallow.' But till I hear of a rival candidate for first honours, I shall still say to that noble trout of Hungerford, '*Tu maximus ille es.*'

The system of feeding which gave him and sundry other stately 'bulks'—like Arac's brethren—to the market was briefly as follows. Two adjacent tanks—for the eaters and the eaten—were supplied by a running stream, and now and then a large hooped landing net with small mesh was dipped into the reservoir of bait, and its contents handed over to the cannibals hard by. Then ensued a grand scene: a dozen speckled giants appeared, rushing, plunging, gulping, walloping, till the last victim had disappeared, when tranquil digestion became the order of the day. Under this system of training, a trout on a large scale, caught lank and lean after breeding, might easily double his weight in the course of the season. It should,

however, be remarked that much will turn on the smallness of the fry. Trout are sadly indifferent to family ties, but they will thrive on their infant grandchildren or great-grandchildren, whereas the occasional assimilation of an adult son or daughter will not keep them in condition. The heaviest meal will not fatten when it takes ten days to digest. Hence the great value of a good supply of minnows in a trout stream. Easily caught and greatly relished, they tend to check the practice of infanticide among elderly trout, while they are fattening from being readily digestible.

I have roughly guessed at two pounds as the weight beyond which a trout should not be wholly dependent on insect diet; but they sometimes take to the minnow very early. I remember watching a fish on the upper waters of the Frome extremely busy among some fry just where a small drain joined the stream. I was fly fishing, but, failing to raise him, I caught a tiny stickleback, clipped off the spines, and threw it to him on a double worm hook like a fly minnow. He took it instantly, and on landing him I found that, though weighing little more than three-quarters of a pound, he had actually forty-six small minnows in his maw, the uppermost freshly swallowed, while those farthest down were more than half digested, and perhaps more numerous than I made them out by the tale of backbones. This fish, though he had taken to a minnow diet so young, was very thick and firm-fleshed.

But it is for keeping up the condition of really large fish that an abundant supply of minnows is especially desirable, and I would strongly urge proprietors and angling clubs to lose no opportunity of obtaining additions to the local stock. There are plenty of small streams and spring ditches where minnows abound, with no trout to keep their numbers down, and it will be best to obtain them from a great variety of waters. Care must of course be taken that no fry of 'scale fish' find a place among them.

Next to the minnow in value as food for trout comes that very delicate little fish, the stone-loach, or 'beardie,' the delight of

every urchin who has 'paidlit in the burn,' where it is found cuddling cannily under the shady side of a stone. Elderly trout pursue the loach most greedily, and seem to prefer it even to the minnow. I have never known the experiment tried of introducing it into a trout stream, though I have known several in which it was quite at home. But from the great variety of brooks in which it thrives, ranging from Scotland to Devonshire, I think such an experiment would be well worth trying It would succeed, I feel assured, wherever there are plenty of gravelly shallows, broken by stones from the size of a fist to that of a brickbat.

The 'miller's thumb,' or 'bull-head,' has nearly the same habits as the loach, and is relished by trout in spite of his spiny shoulders.

Again, there are certain small crustaceans, popularly known as 'fresh-water shrimps' (*Cammarinæ*, I think, is their learned name), which are found in fine sand in sundry streams known for the firmness and flavour of their trout. But of the habits of these queer little wrigglers I know nothing. I have merely a general impression that they ought to be classed among 'movable feasts' for trout, with a vague hope that some brother angler with equal zeal and more knowledge will succeed in introducing them to new waters for the fattening of underfed fish.

It is well known that small shell fish form a large part of the diet on which fish thrive in many celebrated lakes. Loch Leven may be mentioned as a case in point, though the area of the weed beds from which its trout pick their favourite food has been greatly reduced. The gillaroo seems to owe his special excellence to the same 'hard meat,' and I have little doubt that his distinctive gizzard is merely an organ developed in the course of many generations to aid in the crunching of shell fish. But I have never seen it suggested that the trout of our brooks and rivers have the same taste for these rough morsels. There is, however, one genus—that of *Limnæus*—several species of which might, I think, do good service in a trout

stream. One [1] especially looks as if it would be 'catawampously chawed up' by any trout of good taste. The shell is very frail; with a wide transparent lip ; and in warm weather you may see them by hundreds floating over the surface of a weedy pool with this lip upwards, surmounted and overlapped by a tempting expanse of soft, fat body, most inviting to any hungry fish. They are, it is true, chiefly found in still pools, but would thrive in the slow sedgy reaches and quiet backwaters of large streams.

This is not a mere conjecture of my own. A valued friend, the late Mr. Morton Allport, of Hobart Town, to whose judgment and energy Tasmanian pisciculture owed much of its success, imported a number of these shell fish soon after the introduction of English *Salmonidæ* into the island, and watched their multiplication with great interest. He found that they would thrive in quiet streams, and showed them to me clustering round a bed of the English water lily. They were, in his opinion, excellent food for both trout and perch.

I have yet one more form of trout diet to mention which may surprise many of my readers. I speak of a certain very small leech, never, I believe, found in rivers, but abundant in sundry lochs. I must confess myself utterly ignorant of the laws which determine the habitat of these delicate crawlers, but I have found trout literally gorged with them who were far above the common standard in colour and flavour ; and were I about to establish a normal training school for *Salmonidæ*, I would stock my lake or reservoir with a few hundred of these *hirudines*, obtained, e.g. from Llyn Manwd, near Festiniog.

I have gone into these details from a conviction that the trout fishing of the future must turn in great measure on the question of food, and that any and every means should be tried to increase the supply. In dry seasons, the upper waters of our streams require especial looking to, when they are too much shrunk to attract the fly fisher. It is occasionally necessary to move large numbers of the fish down the stream as its sources

[1] *Palustris?*

fail; but, short of this extreme case, a palliative may be adopted —more wholesome, I admit, than savoury—by a keeper who will condescend to details. A few of the crows, magpies, stoats, or cats, that have fallen victims to his professional zeal, may be hung on branches overhanging the water holes in which the fish are gathered to keep their enforced Lent, and a goodly shower of gentles will greatly soften the rigour of the fast. In fact, no source of supply should be overlooked.

Few anglers are unacquainted with the annoyance of frequent wasps' nests along the bank of the stream they are fishing. I have myself more than once been driven to ignominious flight from a promising pool, and the thought has come into my mind, 'I hope when that nest is taken its fragments may be thrown into the stream.' If anyone asks, 'Why, what's that good for?' I reply with Shylock, 'To bait fish withal!'

GRAYLING.

I have thus far spoken almost exclusively of trout. The grayling, however, deserves more than a mere casual notice, and Cotton's ghost might haunt me if in writing of 'fine and far off' I ignored the fish he loved so well.

And indeed, 'for my own particular,' I greatly admire the grayling, who, I think, is less prized than he deserves. His beauty is the least of his merits—yet how beautiful he is! Taken out of season—in June, for instance, or early July—the dull yellow-brown of his back and sides is not attractive; but when he has recovered his condition, and adds the charm of colour to his always graceful shape—when he shows a rich dark tint down to the mesial line, and silver mail as bright as that of the salmon in level lines below, while his lofty back fin, like some 'storied window, richly dight,' transmits the sunshine through purple, red, and gold, no lovelier prize, save the rarely caught red char, can grace an angler's creel. The curious vegetable fragrance, again, whence he draws his name

of *Salmo Thymallus*, contrasts agreeably with the ancient and fish-like smell which clings to other finny captives.

For the table, I should place a well-grown grayling in autumn or winter above the average of river trout, while the 'shetts,' or two-year-olds, are in season all the summer through, and if judiciously fried are nearly equal to a smelt in flavour.

Cotton is in a measure right when he calls him 'the deadest-hearted of fishes,' making 'no great stir' on the hook. He bores steadily down toward the gravel, working mostly up stream, but rarely making a sudden rush or attempting to weed himself. Yet even this dispraise needs some qualification. In small streams I have several times encountered grayling who fought for their lives with all the dash as well as the doggedness of lusty trout, though I have never met with the like in a large river. I might make a fair guess at the cause of this difference, but prefer to record the simple fact.

I have seldom fished for grayling with any lure but the artificial fly. To me, indeed, the crown of all fly fishing is a bright breezy day on the Teme or Lug about the middle of August, when the grayling are coming on and the trout not yet gone off. The sport is varied but almost continuous; there is seldom a reach to be 'skipped' on your river-side beat. From the dashing rapid haunted by trout you ascend to the steadily running ford, from two to four feet deep, in which you know that the grayling lie thick—'not single spies, but in battalions.' At the top of this again you come on a deep pool, with foam-flecked eddies where the trout reassume their sway, while on the confines of these different reaches you may hook either trout or grayling or both together. A brace of the former with one of the latter, or *vice versâ*, make rather an exciting complication.

This delightful chapter of 'dual' captures ends with the first week of September; but there still remains a good spell of grayling fishing *pur et simple*. They draw together more and more in the quiet fords, and feed more b[illegible] and continuously.

Sunshine sometimes appears to improve the sport, and on 'a glorious day in the golden-bright October,' with the most ordinary care in casting towards the light, you may not only take fish after fish along sixty yards of water, but on reaching the end may retrace your steps and fish it over again with equal success. When grayling are rising freely you may fill your basket in perfectly smooth water by a long cast with the finest gut.

A few words as to the style of casting which should be adopted may not be amiss.

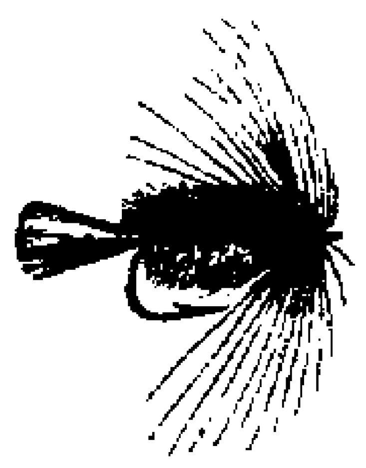
In the first place, I care very little for up-stream or down-stream fishing when grayling are my object. I cast right across the ford, with just a shade of upward tendency. Whether in working the stream I shall move up or down its course will be matter of convenience depending principally on the sun and wind. Grayling being chiefly found in the lower and broader reaches of the river, and affecting the mid-channel rather than the sides, cannot be reached by the up-stream cast unless you are wading deep, and not always then. If you wade you had better move up stream yourself to avoid disturbance, but you will still, I think, succeed better by throwing across than ahead. Grayling being, as I have said, gregarious, you will of course greatly improve your chances by fishing with at least two flies, and in a fair-sized river I seldom use less than three. Here the cross-throw has an obvious advantage. I have killed doublets a dozen times a day, with now and then three fish at a cast.

'Fine and far off' should be the fly fisher's maxim with grayling even more than with trout. But not the less must he study to throw as little shadow as possible. The grayling lies chiefly in the open, and is easily to be approached under cover, so that everything may depend on your being on the right or wrong side of the water.

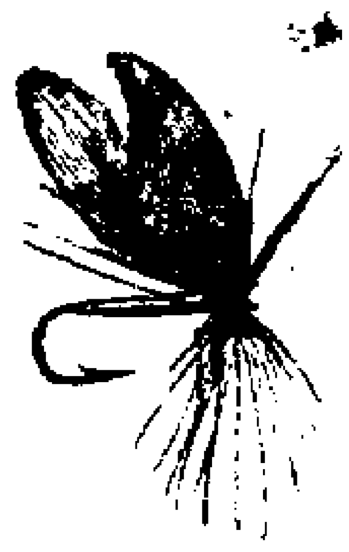
It should be borne in mind that the grayling shoots upwards at the fly almost vertically, and, if there is any eddy, often misses it. Throw over him again and again no matter how quickly; you will have him at last. I remember killing a good fish at Leintwardine at his eleventh rise. As to the life-like

working of the fly I have already said my say, and I will only add that in grayling fishing I repeat my cast more frequently, *cæteris paribus*, than when throwing for trout.

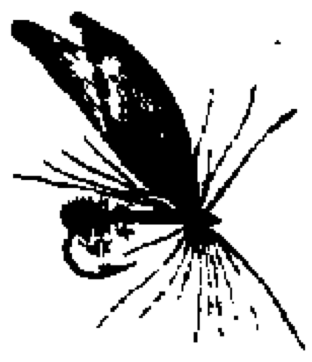
Of flies I have but few on my list, some of which I have named already as favourites with trout. Generally speaking, grayling flies should be small and of a marked character. Wren-tail with an orange body—a grand killer in Derbyshire—the fern fly, ant fly, silver blue and orange tag, with a small but showy red spinner for the evening, are all that I should specially recommend.



ORANGE TAG

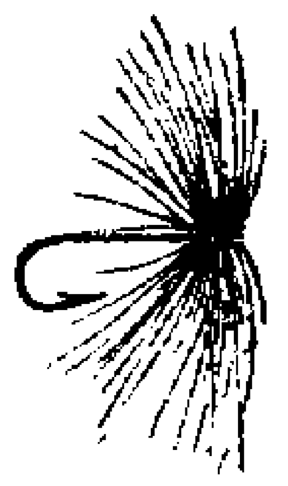


FERN FLY



RED ANT

WREN TAIL



SILVER BLUE

Though I care little for grayling fishing except with the fly, I ought fairly to mention that the heaviest fish are caught with other lures. I have heard of very large fish *out of season* taken with trout flies in summer in the Test and Avon. But, putting aside these worthless captures, grayling of the very largest size are chiefly taken by 'sinking and drawing' with the artificial grasshopper, or with worm or gen[illegible]yself—and I think I have scored pretty heavily—the [illegible]ayling I ever

took with the fly weighed but two pounds and three-quarters, nor do I remember to have ever raised a larger. They run much in sizes, and in the streams of Shropshire and Herefordshire, where I am most at home, the September fish, representing the well-grown 'shetts' of the previous year, run close upon three-quarters of a pound, while those a year older weigh about a pound more. These latter are really noble fish, and give excellent sport with fine tackle; yet they fall far short of those killed with the gentle, especially when combined with that attractive lure, the 'artificial grasshopper.'

The heaviest basket I ever heard of was made at Leintwardine by the late Sir Charles Cuyler—a sportsman who had, I believe, no superior with the gun and very few with the rod. The exact weight, taken at one bout with the 'pointed' grasshopper, I cannot recall, but the best nine fish weighed twenty-seven pounds.

The grasshopper, as I tie it, has a plumpish body, ribbed with alternate strands of green and golden floss silk, with a narrow strip of fine quill or straw laid lengthwise on each side. The hook is about the size of that used for a small green drake, and along the back of it is lapped a small slip of lead, to facilitate sinking. Care should be taken that the bulk of the grasshopper may be chiefly at the back of the hook, in order not to interfere with the hold, and there should be room for a couple of gentles or a small worm-tail.

As the large fish suck this in after a most gingerly fashion, it is usual to have an inch or so of a small-barrelled quill, something like a miniature float, sliding along the line, just far enough from the hook to be always kept in sight during the process of 'sinking and drawing.' When a fish takes, this is seen to make a slight but sudden downward movement, so that the angler's eye gives him warning before his hand can feel the touch.

[Diagrams of the artificial grasshopper and float will be found in Mr. Pennell's article on 'Bait Fishing for Grayling.']

Were I d[illegible] pot fishing without regard for the

daintiness of my favourite sport, I could easily—especially in a bright low water—increase my take of fish by 'pointing' my fly hook. An ant's egg serves the purpose well, being both cleaner and lighter than a gentle.

I remember early on a July morning mentioning this to a friend who was driving me over to Leintwardine. W—— had little hope of sport; the river was low, the fish shy; the grayling especially, he told me, were sulking in shoals at the bottom of the deep pools. 'Were it not for your club rules,' said I, 'which you tell me are so very strict, you might pick out a few of those fellows by pointing your fly hook with an ant's egg.' He replied that it was not to be heard of, yet methought was rather curious as to the forbidden process.

We parted shortly after at the water-side, and before we met again in the afternoon I had a grand basket of trout. The river was so low that every stake showed; the fish came strong on the feed, and behind every stake I could see the suck of a goodly snout, so that a long cast up stream with my two-handed rod was absolutely murderous. W—— had done very little with the trout, not having fished so 'fine' or so 'far off,' and having been unlucky in his choice of water. But there were two or three really handsome grayling in his basket, against which I had nothing to show. I had killed the only one of decent size which I had seen rise during the day, and even he was no great things. Could it really have been *mea maxima culpa* that I had taken no fish like those before me? W—— answered my questions as to the fly he had used with an admirable steadiness of countenance; but when 'still I gazed, and still my wonder grew,' he could stand it no longer, and burst into that cheery ringing laugh which his many friends round the Clee will recall so well and so regretfully. It was impossible not to join chorus as he just articulated, 'Ants' eggs.'

The gentle, used by itself on a very small hook and thrown like the fly, is very killing, especially after Christmas, when breeding-time draws near, and the grayling grow sluggish and dainty. The worm will kill through autumn and winter, and is

easier to manage than the grasshopper, as you may give your fish more time. But, after all, give me an open ford, a clear cast, and the artificial fly.

This irregularity of 'location' is very puzzling, especially when we consider how closely some of the streams whence they are absent resemble others in which they abound. The hypothesis which regards the grayling as a foreign fish, imported by the monks at some unknown date, seems quite untenable. It is, however, more to the purpose to inquire whether these valuable fish might not with advantage be introduced into many waters where they are hitherto unknown; and on this question I have no doubts. Let us have grayling in as many counties as the nature of the streams will permit—at all events, in many more than at present. There are some first-rate trout streams into which, on the principle of 'letting well alone,' I should hesitate to introduce them, for fear of seriously reducing the supply of trout food. It should, however, be remembered that in shallow, rapid reaches of water, and wherever the stream is violent as well as deep, grayling will not rest. Nor do they ever work up stream, having (unlike the trout) a tendency to drop down from the upper stretches of water when these grow shallower till they reach the fords, when they find themselves at home—calm, even-flowing reaches, of moderate depth and speed. Thus the effect of their competition for food is necessarily limited, while the advantage of their neighbourhood to the trout—as, for instance, in the best Derbyshire streams—is found not only in the possession of two game fish for sport or the table instead of one, but in the extending the legitimate angling season through the autumn and winter months.

I have myself had no experience in the artificial breeding of grayling, and cannot pretend to say whether their introduction to new waters would be best achieved by this method or by moving a considerable number of moderate-sized fish. But with our present knowledge and appliances either plan might surely be carried out with little difficulty. If the fish are to be transported alive, the best time for their compulsory

migration would probably be the very close of the year, that they may have the advantage of cool weather for travelling, and time to settle down in their new quarters before the breeding season.

Had I the direction of a 'Grayling-extension' scheme, I should wish above all things, without prejudice to the claims of humbler streams, to have the experiment tried on a large scale in the Thames. If my memory serves me, a few were turned in near Reading some fifty years ago, but nothing came of it, though a solitary fish was captured three years after. To be successful, the attempt should be made in several successive years and in three or four well-chosen places. I have seen little of the Thames of late years, but having once known the river thoroughly from Streatley to Richmond, I can recall every feature of sundry reaches which formerly struck me as suitable for grayling. For instance, there is a fine ford immediately below Maple-Durham lock ; another about a mile above Spade Oak, where the old buck stage formerly stood at the meeting of the streams ; and miles of likely water between Maidenhead and Monkey Island. Penton Hook, again, though not clear in my mind's eye, occurs to me as fine grayling water, neither too brisk nor too dull. No doubt the pike in the Thames are a serious obstacle, though not, I think, an insurmountable one ; but, on the other hand, to introduce a new and valuable fish into the river beloved by the millions of London would be no trifling public service.

There are however plenty of other streams, from the lowlands of Scotland to Kent and Sussex, where the grayling might be introduced with every prospect of success. Among those nearest to London I should name the Stour, and perhaps the Darenth. The Driffield Beck below Wandsford Mill seems exactly fitted to carry grayling side by side with trout.

But I do not pretend to enumerate the streams in which the experiment should be tried. I wish rather to set angling clubs and riparian proprietors to work in what seems to me a most promising field. Especially let it be remembered that the

grayling is rather a northern than a southern fish, and beyond the British Isles thrives best in high latitudes. I do not see why we should not have our finest specimens from the north of Scotland. At present I know but one stream where 'Thymallus' has been naturalised during the present generation—the Corve, a small tributary which joins the Teme at Ludlow. There may, however, well be others, as in a conversation a few years since with the Editor of the 'Field,' he told me of some grayling which he had recently transported by rail with perfect success. These fish, however, were destined for a southern stream.

Here I might fairly lay down my pen; but age has its privileges, and holding with Cicero that the greatest of these is 'authority,' I am tempted to add a few miscellaneous hints on matters interesting to the angler, trusting that with a few, at least, of my readers, to whom I shall not be, like one of my ancestors, a mere *nominis umbra*, they will carry some weight.

And, first, as to tackle. Never buy a cheap rod; it may be admirably finished, but the chances are against its being thoroughly seasoned. It is only the great houses that can afford to keep their staves long enough in stock to insure durability. Green-heart, and some American 'arrangements in cane and steel,' are now much in fashion, and I believe on report that you may now obtain a rod of greater power—especially for throwing against the wind—than those which have contented me. Still, sound hickory is not to be despised.

If you wish your rods to last long—and the two on which I depend have been in use fifty and twenty years respectively—look carefully to them at the end of the season. Let them be revarnished and relapped in the winter, and have all the rings save those on the butt moved some points round, so as to shift the strain and obviate any tendency to a permanent bias or 'cast' in the wood. A splice rod has more perfect play than a jointed one, and is worth setting up if you live on a river; but otherwise the jointed rod of the present day, with ends care-

fully brazed to prevent swelling in the socket, and patent ferrules to save the awkward process of lapping the joints together, is a handy tool enough for practical purposes. On a wet day it is a good precaution to rub a little oil or deer's grease round the rim of each ferrule.

As for the reel, good ones are now as plentiful as blackberries. The circumference should be large and the barrel short, so that a single turn may gather in or release many inches of line. Multipliers might be pronounced an abomination, did not the proverb forbid our speaking ill of the dead. Anglers generally place the reel with the handle on the right, but I suspect the opposite practice is preferable; the control of the fish will thus be left to the 'better hand,' while the left will suffice for 'pirning in' and 'pirning out.'

With regard to reel lines, I still adhere to the old silk and hair, but I can well believe that oiled silk, *sufficiently tapered*, is better in a high wind. Its weight, moreover, is a constant quantity, while that of silk and hair varies unpleasantly in rain and towards what I heard a Lancashire keeper call 't' faag eend o' t' dey.'

As to the gut collar, the question of 'tapering' is yet more important; in fact, perfection in casting cannot be attained unless this be 'fine by degrees and beautifully less.' I have never bought any as perfectly adjusted as those I have tied for myself. But the graduated arrangement of the links is delicate and laborious work—more trying, I think, to the sight than even the dressing of flies, and the difficulty of the task of course increases with years. It is a good plan to have the gut sorted beforehand into distinct sizes—thick, medium, fine, and finest—and to tie a good many collars at one sitting when your eye and hand are in. Be very careful with your knots, and never attempt to make one till the gut has been thoroughly soaked in tepid water. Pay a high price for the best gut, particularly for picked samples of the finest. Engine-drawn gut is generally worthless; single hair is far preferable—indeed, were not the docking of horses so universal, it might be often used with

advantage, as it falls more lightly, reflects the light less, and when taken from an undocked stallion is of such a length as to reduce the knots to a minimum.

The best chance of obtaining first-rate hair would, I think, be from some of the dray teams of great brewing firms. In some of our open northern streams good hair is invaluable. But it must be used with caution. Hair is very elastic, but will not bear a continued strain like gut. Leave it tied at a stretch, and it will shortly break. Hence, with even the strongest hair you must play your fish with a lighter and, so to say, a more variable hand than when using gut tackle. As for creels, a small one may do for brook fishing, but for use on good waters let it be roomy—enough so to hold at least twenty-five pounds of fish. I have not been specially privileged in access to the very cream of trout streams—have never, for instance, fished at Stockbridge or in the renowned Lathkill—have never had a day in the water at Cheynies, immortalised by that genial sportsman, Anthony Trollope, or in the upper waters of Foston Beck, admirably preserved by Colonel St. Quintin. Nor, again, have I ever had leisure to pick my days, but have taken my chances of a holiday or half-holiday when they offered. Yet I have not unfrequently filled a basket of the size recommended till it overflowed into my pockets.

By the bye, I think the form of the creels in general use a great mistake. They should be made much longer at bottom, so that a good weight of fish may be laid out without their pressing on each other, or being disfigured by bending. In an ordinary basket, the undermost fish on a good day are grievously crushed by the last comers—a sorry sight when laid out.

Questions of dress come near to those of tackle. A broad-brimmed *stiff* felt hat is your best thatch for all weathers. Wear woollen from head to foot, and knickerbockers with the thickest Inverness hose rather than trousers. If you have to wade, you must clothe your nether man accordingly; but do not wade oftener or longer than is absolutely necessary, espe-

cially when there are other anglers on the stream. If you 'establish a raw' on your foot, don't lay it up and 'swear at large,' but wash the place carefully, and clip away the loose skin. Then mix the white of a fresh egg with a few drops of brandy, and lay it over the bare place with a feather. When the spirit evaporates—as it will in a few minutes—a fine transparent film will be left. Repeat this process three or four times, and you will have a perfect artificial skin, which will neither wash off nor rub off. I have done a long day on the moors with such a false cuticle on heel and toe without pain or even inconvenience.

But your fly fisher must be fed as well as clothed; and though by virtue of his healthy calling he ought to make a substantial breakfast, somewhere towards 2 P.M. (generally the slackest time of the day) he will feel that Nature abhors a vacuum. Something he must have in his pouch

> Quod interpellet inani
> Ventre diem durare.

What that something shall be must depend on his taste and the state of the sideboard. But if he inclines to the sweet simplicity of sandwiches, let him make them of ham sliced very thin, and overlaid with marmalade. The combination may seem startling, but will be found most palatable, particularly in warm weather. A layer of unpressed caviare, again, with a squeeze of lemon and a sprinkling of mustard and cress, though less substantial, has a pleasant relish.

As for fluids, during many years, when I was well up to the mark as a pedestrian, I found nothing better in a long day by moor or river side than an occasional mouthful of cold tea. But I would mention for the benefit of those who, like myself, are in the down-hill of life, that I have found a great resource against fatigue in a pocket flask of the 'Vin Mariani.' It is an extract of the 'coca leaf,'[1] the sustaining power of which (see Kingsley's 'Westward Ho!') has been for centuries known to

[1] *Erythroxylon coca.*

labouring men in Central and Southern America. There are many preparations, but I find this the best and pleasantest. It is procurable from Roberts, the Bond Street chemist.

The luncheon disposed of, there remains a high and doubtful question—shall Piscator smoke? I think the ayes have it. For myself, in spite of King Jamie and his modern supporters, I cannot dispense with my water-side cigar, especially on a hot afternoon. No one, I think, can fully appreciate the effect, at once soothing and restorative, of a well-timed weed, who has not enjoyed it in a tropical climate. Often after a weary ride through Australian bush, the glass standing at 110° or even 120° in the shade, my pulses throbbing and every nerve ajar, I have thrown myself from my horse, set my back against the shady side of a huge gum-tree bole, and after a few whiffs of a ready cheroot have felt myself calmed and refreshed 'beyond the Muse's painting.'

Even in England there is many a sultry afternoon when the fly fisher, after four or five hours on the water, will enjoy the fragrant leaf with similar zest. And, luckily, the hottest part of a summer's day is usually a time when the fish are little on the move, so that he may have his smoke out without sacrificing his sport. Indeed, if he means to make a long day in July or August, he will often do well to prolong his rest, and while away an hour or two with a well-chosen pocket volume of Horace, for instance, or Boswell's 'Johnson,' or Percy's 'Reliques'—anything that may be engaged by snatches, without continuous reading. There are times of sultry stillness when to offer a fly to the sulky low-lying trout is as useless as whistling jigs to a milestone. Nevertheless, the angler at rest will do wisely to keep his ears open, and to cast an occasional glance out of the 'tail of his eye' up and down the stream. Three or four heavy rises seen or heard in succession may give him unexpected notice that the fish are astir again.

And here let me remark, that there are few questions concerning trout at once so interesting and so difficult of solution as that which touches the times of their feeding; the hours and

days when they are likely to take freely. To the first part of the question it is easy to return a general answer; subject, however, to frequent exceptions, due to what seems like pure caprice or 'cussedness' on the part of the fish. As a rule, from the beginning of April to the close of the season the surest hours for sport are those from nine to twelve. In spring, however, the fish often continue rising freely far into the afternoon, whereas in summer, unless strong wind or heavy showers come to freshen them up, they mostly go off the feed between one and two, coming on again after a longer or shorter interval, and rising boldly from an hour before sunset to an hour after—as long in fact as you can see to throw. This, however, is only in warm weather; if a dry cold wind comes up late in the afternoon your evening cast will disappoint you. Yet this only holds good as far as the Border; in the northern counties of Scotland trout are almost invariably astir on a good ford towards dusk in July and August.

Looking far south again, I may remark that in Devonshire during the spring months something may always be done between 2.30 and 4 P.M.

So much for the 'happy hours.' I have still to inquire what constitutes a good fly-fishing day; and my attempt at an answer must involve a sweeping confession of ignorance. Most anglers indeed will agree in praising a day of chequered cloud and sunshine, with a strong yet soft breeze from the west or south-west; and there is no doubt that on such a day good sport is generally attainable and the fly fisher's craft is plied under the pleasantest conditions. Yet on shy waters I think I have made my heaviest baskets in a stiff nor'-wester with a dark sky and frequent bursts of heavy rain. The fish are thrown more completely off their guard and take the fly without misgiving as a battered and half-drowned insect. Larger flies, too, and stronger gut may be safely used.

Yet this only brings us to a conclusion which might have been taken for granted *à priori*; viz. that roughened waters and dimmer light make it more easy to deceive the fish. But

an east or north-east wind very rarely produces the same satisfactory results. This may in part be due to the smaller show of the fly when the wind is 'snell and keen;' yet this explanation hardly meets the case, as trout often take very well when flies are scarce. We may, however, assume it is a general though unexplained rule that a moist air is better than a dry one.

In waters with which we are familiar something may be learned from the colour of the surface. I was fishing long ago with my brother in Loch Fruchie, and taking fish, such as they were, very fast. Suddenly the old boatman said, 'Ye may pit doon yer gaud noo.' My brother to humour him at once laid down his rod. I being, rather what Mrs. Tabitha Bramble calls an 'imp-fiddle' in such matters, merely asked why? 'She's the wrang colour' was his brief answer; and certainly, though the breeze continued, the aspect of the loch had become dull and sullen. I fished on, however, and in the course of the next hour caught one small fish, when the veteran very pointedly said to my brother—ignoring me as unteachable—'Noo, Mr. *John*, ye may tak yer gaud again.' And sure enough, the hue of the lake had grown brighter and livelier, and the fish came on the feed again.

I have borne this lesson in mind ever afterwards, and have certainly found that when the wavelets on a rippled pool show a blue or blue-black tint, there is sport to be had, but when they wear a dull leaden colour the fish sulk. *Why* they do so is another matter, as to which this deponent sayeth not. Again, after a rough stormy night, trout seldom rise well before eleven o'clock; this, however, is probably owing to their having been on the feed all night.

The worst of all days, undoubtedly, is one when a thunderstorm is threatening but delays to burst. The clouds are piled in heavy masses, and every break in their array shows a lurid light gleaming through, of an indescribable tint between amber and lilac; the air is hushed and still but for an occasional hot gust, which seems to come from nowhere in particular. You

feel oppressed yourself, and hardly wonder that 'the springing trout lies still.' Indeed it is a common apology for an empty creel that 'there is thunder in the air.'

But in truth when the storm actually breaks over you it gives you a grand chance of sport. I shall never forget a short bout of fishing which I enjoyed one evening just above Wansford Bridge. I had been early on the stream, though well aware from the aspect of the sky that my cake was dough till the threatened elemental war was fairly let loose. I worked my way doggedly down the beck, casting from time to time, as on Sam Weller's theory I might have eaten oysters, 'out of sheer desperation.' A few little fish I certainly took—they always *will* come when you have to put them back—and one solitary pounder, who must have been either eccentric or life-weary to rise on such a day.

But it was tedious work—the heat oppressive, the air dead. Even my attendant boy lost his faith in my star—took short cuts and long rests. I spun out my luncheon, smoked more than was good for me, and though I still held on for the heavier water below, I often doubted my weather forecast, and wished myself 'taking mine ease in mine inn.' But the stillness was at last broken by distant mutterings of thunder; the clouds banked up higher and higher, and just as I had reached the open water between Wansford mill and bridge the storm was upon me, with deafening peals and a slanting deluge of rain. Luckily I was waterproof, having one stiff cape over my shoulders and another buckled round above my hips and protecting me as far as my knee-boots.[1]

The wind was too furious to permit casting, but as it blew directly on my back I had simply to let out as much line as I wanted and let it fall as I could. Never did I see good fish rise so fast. The fly was seized as soon as it reached the water, and the only difficulty in killing the fish lay in the violence of the wind. In less than an hour and a half I basketed twenty-

[1] I recommend this plan to all anglers; it is cooler than one long overcoat, and throws off rain without confining the perspiration.

one fish weighing twenty-eight pounds. This could not have been done within the time had I not, in anticipation of the wild weather, been armed with stronger gut and a larger fly than usual. Four-fifths of the fish were taken with the blue-bottle, an excellent fly towards the close of summer, when the natural insect goes daft (to use the Yorkshire phrase) and cannot keep itself from 'the drink.'

Many similar experiences have led me to the conclusion that in bright, shy waters a thunderstorm sets the big fish feeding 'owdaciously.' And it seems probable that the sudden changes in the mood of the fish which every angler must have noticed are due to the electrical condition of the atmosphere. It often happens that trout all at once cease rising, the river which just before was alive with rises becoming absolutely dead. In such a case an old hand will sit down and wait. Days may be better or worse, but there is hardly ever a day, except on a thick, rising water, when the fish do not come on the feed at some time or times which the wary angler will not let slip. 'Tout vient à qui sait attendre.'

Even odder than the sudden sulking of trout is the fit they occasionally take of 'short rising,' when after every promising break you feel only a slight twitch, and never succeed in hooking your fish. Whether this is due to some ocular deception which makes them miscalculate their rise, or whether for the time they are merely amusing themselves with the fly, like 'MacFarlane's geese, that liked their play better than their meat,' I cannot pretend to decide. The fit seldom lasts long, and while it does it tries the angler's temper sorely. I remember once in a Devonshire brook raising from twenty to thirty fish in succession without a single capture. The sky changed, and I took seventeen without a miss.

This may show that after several failures a fly fisher should not conclude too hastily that he has 'tailored' his fish. They may never have had the hook in their mouths. When trout rise short, it is a good rule to give up striking altogether, and be content with keeping a taut line till some determined fish

hooks himself. If your fly be not hastily plucked away, a trout who has merely nibbled at the wings or tail may at a second or third rise 'go the entire animal.'

If you hook a fish foul—and the symptoms are not to be mistaken—risk your tackle rather than slacken your hold. He will never dislodge the hook unless by your timid handling. I once hooked a three-pounder near the tail—luckily on an open stretch of water—and held on to him till in his struggles down stream he swung in to the shore and was cleverly netted by a friendly looker-on, who had continually shrieked to me to 'give him line.' He dropped off the hook the instant he was netted, and I showed my friend with pride that there was a small scale on the point of the hook *below the barb*. The fish had been literally killed by the hold of the mere tip of the steel on his tough skin.

But I am running riot in old reminiscences. Happily, they are at least cheerful and blameless records, and raise no 'accusing shades of hours gone by.' No doubt, the fly fisher has what Mrs. Ramsbottom calls his 'little Piccadillies;' he does sometimes fish a little beyond his liberty, and perhaps on a very bad day when he has landed a trout barely up to the mark in point of length gives the benefit of the doubt to the creel and not to the fish. But on the whole I have found my brother anglers worthy men and pleasant companions, with whom acquaintance readily ripened into friendship. Their quiet converse with nature seems to smooth down asperities of character, and they move 'kindly men among their kind.' There are few of them, too, who have not during their devious rambles noted something in the field of Natural History which they can impart in conversation. Speaking as one of the fraternity, I think the caution we most need is the time-honoured *Ne quid nimis.* The fly fisher's art is so interesting and so many-sided that its votaries are too apt to fancy themselves justified in making it a business instead of a recreation. I have known very clever men who devoted some eight months of the year to a series of 'fishings,' 'and to *salmon* gave up what was meant for mankind.

I am by no means sure that I should not have fallen into the same error myself but for the blessed necessity of work, early laid on me and scarcely abating with years. But I am very certain that had I done so I should have penned these pages, the records of my experience as a fly fisher, with regret instead of pleasure.

If I may venture a few 'more last words' to my brethren of the angle, they shall be echoes of a farewell uttered long ago.

Finally, pursue a liberal sport in a liberal spirit. Help a brother angler freely, especially when less able than yourself to afford a well-stocked fly book. Neither poach yourself nor encourage poachers by purchasing fish procured by doubtful means. Spare small fish (except in those over-stocked waters where all are small) and large fish when out of season, but not past recovery.

Abjure lath fishing, cross fishing, netting and spearing, and renounce salmon roe except to thin the trout near the spawning beds of salmon. And when you have filled your creel, maintain the old repute of the brotherhood by a liberal and not exclusive distribution of your booty.

So may your intervals of well-earned relaxation by lake or stream be welcome and fortunate. So may genial skies and soft showers add freshness to the air and beauty to the landscape. So may hand and eye work truly together, whether you wield the fly rod or lay it aside for the pencil. So may you return home unjaded from your sport, with a light heart and a heavy basket—happy, above all,

To know there is an eye will mark
Your coming, and look brighter when you come.

H. R. Francis.

A beautiful and highly scientific branch of fly-fishing which is yearly coming more into favour, is fishing with the fly dry, floating passively down stream over a rising fish, instead of submerged and guided hither and thither across the current in the fashion of our forefathers—a method of old-world angling sometimes contemptuously described by votaries of the newer art as the 'chuck-and-chance-it' style.

Dry-fly fishing aptly illustrates a remark made prefatory to these pages as to the increase of specialism in matters piscatorial. Fly-fishing is in itself, of course, a 'speciality'—though a most important one—amongst the numerous branches of the gentle art which are comprised in the generic term 'angling;' but fly-fishing with the dry fly is the 'specialism of a speciality.' I esteem myself most fortunate, therefore, in being able to delegate the expounding of its mysteries to two such authorities, both as professors and practitioners, as my friends Mr. H. S. Hall and Mr. Frederic M. Halford. Mr. Halford's beautiful and exhaustive treatises on the subject are doubtless already familiar to many of my readers.

CHALK-STREAM FISHING WITH THE DRY FLY, AND MAY-FLY FISHING.

CHALK-STREAM FISHING WITH THE DRY FLY.

THAT different rivers require different styles of fishing, or, in other words, that the highest art as practised in one locality is occasionally almost useless in another, may now, I think, be laid down as an angling axiom; certainly it is a rule recognised in practice by, at any rate, most fly fishers of experience. On one river trout will take the fly 'wet,' on another it is almost essential to use it 'dry;' whilst on some waters, like the well-known lakes of Westmeath, for example, the only time when anything worth calling sport is to be had is whilst the 'fly is up,' that is, during the season of the appearance of the May fly, and then the lure must be the natural insect itself used with a blow line. The extent to which these differences may exist in different streams is often only found out by the fly fisher through the disagreeable experience of empty baskets, on first visiting a new locality. Many and many a time has an angler, skilled in all the niceties of trout fishing in his own Highland streams, been utterly baffled when he first essayed his luck with the well-fed, not to say pampered, fish of Test, Itchen, or Kennet. And it is not difficult to find the explanation. The character of the clear chalk streams of the south is entirely different from that of the rocky mountain rivers and peat-stained torrents of the Highlands, and consequently the habits of the fish are also widely different. The chalk-streams are wonderfully prolific in insect life, far and away beyond anything of which the trout of Scotland or Ireland have for the most part any experience,

and besides the numberless flies bred in our southern streams, there is always an abundant store of larvæ, shrimps, water snails and other trout food which find their habitat among the weeds, to say nothing of minnows and small fry on the gravelly shallows. So that, with a large choice in their feeding, the fish soon wax fat and dainty, and while a trout in a rapid mountain or moorland stream has to be on the look-out all day long for anything edible which comes within his ken, and even then has hard work at times to keep himself in respectable condition, a chalk-stream fish is always picksome and hard to please, and will only take the fly when the natural insects are sailing down in goodly numbers. At other times he is either sheltering among the weeds, or else busy with bottom or mid-water food.

In many streams a judicious cast of three flies thrown into likely spots with a light and skilful hand will bring fish to the creel fast enough, but this kind of fly fishing for chance fish is seldom productive of any sport on a chalk stream. When, however, there is a heavy rise, and every trout is busily engaged in taking fly, it will be noticed that the fish take up a favourable position just beneath the surface of the stream, and feed steadily and persistently in the most quiet and deliberate manner possible. A movement of a few inches, a careful scrutiny, and a gentle unobtrusive 'suck' describes exactly the usual manner in which a chalk-stream trout takes his surface food. It is quite unlike the rush and the splash with which a Scotch or a Devonshire trout leaves the shelter of a submerged rock to secure the passing fly, and everything combines to make it difficult for the angler to keep out of sight, as well as to put the fly over the fish in an effective and natural manner. When a chalk-stream fish is feeding at the surface, the angler's fly is always brought into comparison with the natural insects floating down, and little sport is to be expected unless the artificial fly is most skilfully made and skilfully handled. It must be sufficiently neat and natural in appearance to deceive any fish, and it must be thrown so as to float 'cockily' like the real fly it is intended to imitate.

Frequenters of chalk-streams fish almost exclusively with a single dry fly, and only when the fish are visibly feeding at the surface. The angler selects his fish, gets behind him (that is, below him), and prepares for a cast up stream. Then taking two or three false casts in the air to judge the exact distance, the fly is thrown with the intention of making it alight gently a foot or two above the rising fish and *exactly in his line*, for a well-fed chalk-stream trout will rarely go even a few inches out of his way for a passing fly. If the fly falls short or wide, it should be left till the line has floated some distance to the rear of the fish, when it must be picked off, whisked through the air two or three times to dry the wings and hackle before a new cast is made. If there is no clumsiness several trial casts may be made before the exact distance is found, and the fish will go on rising undisturbed; but the slightest bungle on the part of the angler is fatal and puts the fish down for the next half hour. If it be remembered that most of the best fish lie close to the bank and that the fly has to be sent down floating naturally correct to the very inch, it will be seen that there is room for great exercise of skill, and to succeed even moderately well requires a vast amount of practice.

It will always be a moot point how far it is necessary or not to present to rising fish an exact imitation of the fly on which they happen to be feeding. And the greater the experience of an angler the less will he be inclined to lay down the law on this and kindred questions: he will have learnt that his preconceived notions, based on extensive observation and practice, have frequently been completely upset by some sudden and unintelligible caprice on the part of the fish.

The anglers one meets on a chalk stream generally have some interest in entomology, and it is the exception for a skilful fisherman not to know something of the natural flies which tempt the trout to the surface. On the other hand, it is generally admitted that with a shy fish it is half the battle to put the fly right at the first cast; in other words, a fish is often thrown off his guard completely by a well-directed fly, no matter what,

so long as it comes down exactly in the right spot before his suspicions are aroused by seeing a foot or two of glittering gut pass over his nose half a dozen times. So that there is a certain amount of truth in the saying, 'It is not so much the fly as the driver,' though the originator of this Hampshire maxim is himself quite as famous for his practical knowledge of flies and fly tying as he is for his skill in handling a rod.

But the angler who really desires to get the most enjoyment out of his sport will never be contented with the utilitarian view which measures a day's sport solely by the weight of the basket; he will always have powers of observation keenly developed, some at least of the instincts of the naturalist will be present, and the marvellous profusion of insect life—which is the peculiar characteristic of the chalk streams—cannot fail to excite his interest. And, other things being equal, there can be no doubt that the entomologist always has a great advantage over the man who knows nothing and cares nothing about the habits and life history of the flies of the streams he frequents. Moreover, there are some days, as all experienced anglers will admit, on which any efforts however skilful appear to be useless until the right fly is found. Then possibly, after an hour or more of fruitless whipping, the spell appears to be broken, and fish after fish falls a victim to the attractions of a single fly, the only pattern in the angler's store which for the time possesses any charm.

A certain amount of fly-fishing entomology may, of course, be learnt from books, but the only knowledge which can be really useful is that which the fisherman acquires for himself by his own habits of observation. The novice should, therefore, make a practice of studying the flies by the water-side; he will soon learn to recognise some flies at a glance, but, however proficient he may become, it is hardly likely that he will ever be able wholly to dispense with the useful habit of dipping up from the water a few of the natural insects, rather than fish for a moment in doubt or hesitation. To readily recognise the fly on which the fish are feeding, and to be able to match it with a good

imitation of his own making, gives a peculiar pleasure and confidence; if to this the angler can add the consciousness of skill and dexterity in the use of his rod, he may wander from stream to stream independent of local fancies and piscatory heirlooms, but with a good prospect of sport wherever he may find a rising fish.

The following is a list of the most useful flies for chalk-stream fishing. It does not profess to be exhaustive, but it will be sufficient, I think, to guide one who is strange to this style of fishing, and to enable him to equip himself with such flies as most southern anglers consider necessary. Several of these flies have already been described by me in the 'Fishing Gazette,' but recent experience has suggested slight modifications in a few cases. However, the patterns here given have all been put to frequent trial by experienced anglers on the Test, Itchen, Kennet, and other streams, and may all be relied on.

I begin with several dressings of the best of all chalk-stream flies:

[The hook numbers quoted refer to those of the 'New,' or eyed-hook scale, in which the small numbers represent the small sizes, and *vice versâ.*]

I. THE OLIVE DUN.

(1) *Body:* Olive silk. I know nothing better than Mr. Aldam's 'gosling green,' but it wants most delicate handling, and great care should be taken not to have too much wax on the tying silk, or it will darken the floss and spoil the fly. A ribbing of fine gold wire is an improvement.

Wings: Dark starling.

Legs and Whisks: Hackle stained olive—not too yellow, but a dull brown olive.

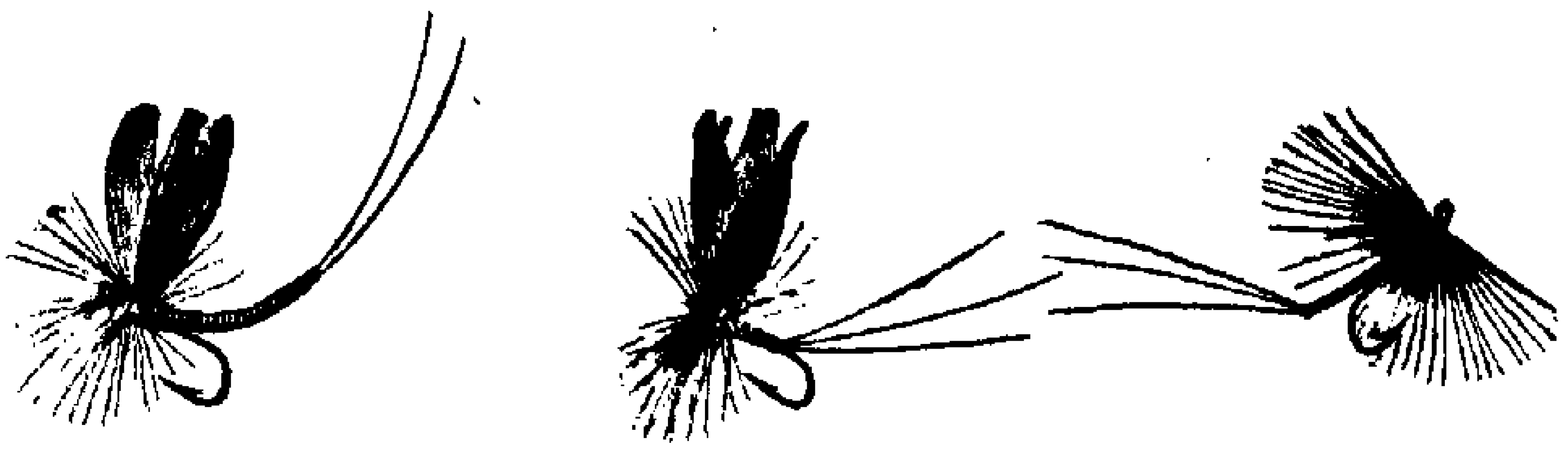
(2) *Body:* Quill dyed olive, with or without gold tag. Wings and hackle as before. This pattern admits of several shades, and is, perhaps, the best all-round pattern that

can possibly be used in Hampshire, from one end of the season to the other. It is always worth a trial. It is sold in thousands, and slays its thousands every year.

(3) The same pattern as the last, with light brown fibres of hare's fur tied in for legs. Very good in April, and an excellent floater.

(4) *Body:* Leveret's fur dyed olive, ribbed with gold wire. Hackle and wings as before. This is known as the 'rough spring olive.' A useful variety.

Hook, o and oo.



I. (5.) OLIVE DUN. III. RED QUILL. VI. RED SPINNER.

(5) The India-rubber-bodied Olive Dun.—This is a 'detached-bodied' fly (figured in the illustration annexed, the numbers corresponding with the numbers of the flies in this list), and if carefully made is a most killing pattern in April. Every year since I first discovered its merits on the Winnal Club water at Winchester I have found it useful, frequently killing with it when the usual favourites have been tried in vain over rising fish. The rubber body was not my own idea, though I believe I was the first to try it and prove its value.

The fly is made lighter or darker according to the colour of the rubber, and wings and hackle must be chosen to match the body. The hackle should be of a brownish olive to harmonise with the body, which, when held up to the light, has a translucent appearance, as like to the body of a natural dun as it is possible to

obtain. It is only in the early spring that I ever do much with this fly, and then I use it on a No. oo hook. It is extremely difficult to tie it small and delicate enough for summer use, but I have killed with it in August on a ooo, the smallest size made. For late summer and autumn I generally adopt horsehair bodies, as the hair can be dyed different shades, and can be used of a pale watery hue which cannot be got in india-rubber. I am never without a few of these detached-bodied duns, and they have again and again procured me sport when all else failed; but it must be distinctly understood that they are only killing because of their close resemblance in colour and transparency to the natural insect. Some people seem to think that it is the detached projecting body which makes the fly attractive, and so they tie detached bodies of quill and silk, which are, of course, dull and opaque, and very inferior to hair or rubber. In fact, I consider it is labour wasted to tie detached bodies except of translucent material; and if silk or quill be used, it is far better to use it on the hook in the ordinary way.

II. HARE'S EAR.

Body: Hare's fur ribbed with gold, and fibres picked out for legs, winged with dark starling. This fly is a great favourite on the Test.

Hook, o or oo.

III. THE RED QUILL, GREY QUILL, AND GINGER QUILL.

(*Vide* engraving.)

These flies are always useful, and they only differ in the colour of the hackle and whisks, though there is room for variety, if it be desirable, in the choice of quill. The red one has—

Body: Undyed quill.
Legs and Whisks: Red hackle.
Wings: Darkish starling. The grey and ginger are generally dressed with lighter wings.
Hook, o or oo, usually the smaller size.

The Red Quill is, perhaps, the best all-round evening fly that can be used in the summer months.

IV. THE IRON BLUE.

This fly comes out thickly on some parts of the Test; it is less common on the Itchen, and in some places it is rarely seen at all. When it does come out the fish generally refuse everything else. It varies a good deal in colour, but I believe the best general dressing to be:

Body: Quill, dyed a dark blue with a violet shade. Some prefer mauve silk with mole's fur.
Legs and Whisks: Dark honey dun, the natural fly having yellow tips to its dusky blue legs.
Wings: From the breast of a water hen, or from the tail feather of the greater titmouse.
Hook, oo or ooo.

V. THE 'LITTLE MARRYAT.'

This is a fancy fly well known at Winchester, and indeed it is a prime favourite all over Hampshire. It bears a close resemblance to some of the pale watery duns which are always to be seen in warm weather. It begins to be useful at the end of April, and if dressed of suitable size it will do well from May to September, and will often kill the best grayling in October.

Body: Very pale buff opossum fur spun on light yellow silk.
Wings: Medium starling.
Legs and Whisks: The palest feather from a buff Cochin China cockerel.
Hook, o or oo.

VI. THE RED SPINNER.

(Fig. vi. p. 340.)

Of all the numberless patterns which have been devised to imitate the gauzy transparency of this fly, I believe this to be the best; of late years it has been most successfully used in Hampshire, and is known as the 'Detached Badger.'

Body: Detached, made of reddish brown horsehair, and firmly whipped to the hook with strong well-waxed silk.
Legs and Wings: A 'badger hackle' dressed buzz. This hackle is difficult to obtain, and is of a rusty grey in the centre (almost black), with bright shining golden tips.
Hook, 0 or 00.

VII. WICKHAM'S FANCY.

One of the most useful flies that can possibly be used, whether for trout or grayling. It is always worth a trial, though what the fish take it for it is impossible to say. It is a very attractive, bright looking fly, and an excellent floater, but it sometimes does wonders in rough, wet weather, when dry fly fishing is hopeless. It should be made as follows:

Body: Gold tinsel ribbed from tail to head with red cock's hackle.
Wings: Dark starling. Landrail makes a nice variety.
Hook, 00 to 1 or 2.

VIII. FLIGHT'S FANCY.

This fly hails from Winchester, and it is very useful towards the end of April, when the olives are beginning to get lighter in shade; and all through the summer months a small 'Flight' may be resorted to with confidence when delicate duns are about.

Body: Pale yellow, or primrose, floss silk ribbed with fine flat gold tinsel.
Wings: Light starling.

Legs and Whisks: Pale buff, or, for a change, honey dun.
Hook, oo or ooo.

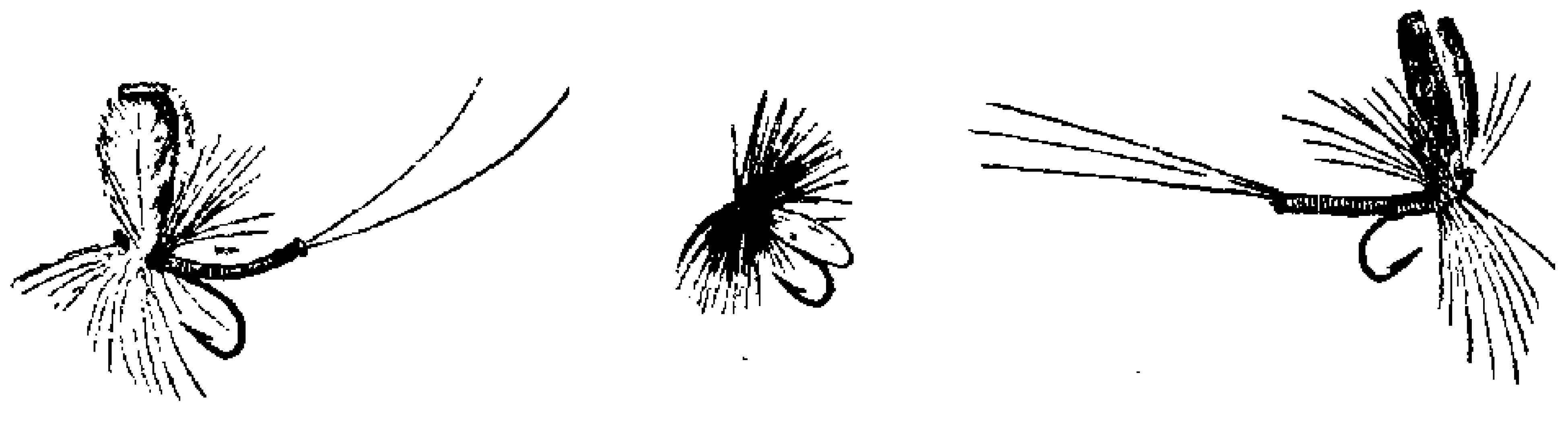
With this list of flies a fisherman may consider himself well equipped for the first two months of the season, and there are many days in every month of the summer and autumn when these same flies tied smaller would be found sufficient to insure the best of sport.

I do not believe in dividing artificial flies according to months, and a good comprehensive assortment of spring patterns will, with slight modifications, always be of general use at all times and in all weathers. Still, there are some very favourite flies which do not appear before May, and as these sometimes entirely monopolise the attention of every feeding fish, they must be added to the list. I leave out the green and grey drake, as they are not found on every water, and almost every angler has his own special pattern; but, in my opinion, May flies are frequently tied too large, and I believe, whatever pattern be adopted, the best sport will be obtained by small flies.

IX. THE BLACK GNAT.

(*Vide* engraving).

The natural fly has a long, thin, shiny black body, not a bit like the fluffy little lump usually seen in the imitation. Then



XVII. JENNY SPINNER. IX. BLACK GNAT. XVIII. THE INTERMEDIATE.

the wings are long and lie folded *quite flat* (not sloped like those of a sedge or alder), and projecting over the tail end of the body, showing a shiny, metallic, gauzy film, in strong con-

trast to the black body, and which cannot be imitated by feather.

This is how I make my pattern. On a oo or ooo hook I put a longish body of black ostrich herl, which has first been stripped. Then I cut a strip of pike scale the proper length and shape to represent the two folded wings and tie it flat on the top of the hook, taking care to show the projecting bit above mentioned. Then over and in front of the wing I take two or three turns of a small black starling's feather, and the fly is finished. It does not float very well, but in fine still weather it is very effective; and the pike scale, tied as I have described, will stand a great deal of whipping.

Those who object to the pike scale wing can substitute starling feather, but the fly will be less lifelike, and on a hot August day certainly less killing.

X. THE SEDGE.

The last two or three seasons this fly has not preserved its reputation as a standard pattern for late fishing on a summer's evening. It has been a mystery to many who used to look upon it as a never-failing resource. A few years ago it killed splendidly at Winchester; and I remember seeing a man come to the Old Barge stream, at eight o'clock one evening in August, and kill five brace of good trout with his favourite sedge. He rarely used anything else in the evening; and I, myself, at that time fished it with more confidence than any other fly. But I have done very little with it lately, and my stock of sedges has not wanted replenishing for a long time.

When the trout and grayling return to their old tastes, the following will probably be found the best dressing for the sedge and its variations:

(1) THE SILVER SEDGE, which I believe is no sedge at all, but

an imitation of the small grass moth which flutters about in the meadows by the riverside.

Body: White floss silk, ribbed with silver; hackled all over with buff or light red hackle.

Wings: Landrail.

Hook, oo to 1.

(2) THE RED SEDGE (or, Sedge proper).

Body: Red fur from hare's face, or fox's ear, or from the reddest part of an opossum skin. Rib it with gold thread and wind on a red hackle from tail to head.

Wing: A ruddy feather from a landrail's wing.

Hook, oo to 1.

(3) THE BIG SEDGE.—This is the local name, but I prefer to call it the 'Cinnamon.' It is a fat, toothsome morsel, nearly an inch long, and answers capitally on a moonlight night, when it is warm, still, and free from mist. I have killed many heavy fish with it, especially in September, during the harvest moon.

The dressing I prefer is the same as that given for the red sedge, on a No. 2 hook, and winged with the reddest part of a cock landrail's wing, or, better still, with one of the under covert feathers of the peahen, which are very faintly mottled with a darker shade of brown.

Though true to nature, I think it is a mistake to dress the body thick, for the fly is apt to be heavy and lumpy, and so float badly.

XI. THE ALDER

Is very useful in June, and on some rivers will kill in the May-fly season better than the drake itself. It is in great favour with the Fairford anglers, and the natural fly is very plentiful on the Colne.

Body: Bronze-coloured peacock herl.

Hackle: Black, or a dull-coloured feather, with black centre and ruddy tips.

Wings: From the tail feather of a hen pheasant.

There is another very good variety known as the 'Button,' or 'red-winged alder,' which should be dressed as before, only that the wing should come from the red tail feather of a partridge.

Hook, No. 2.

XII. THE BROWN QUILL.

Very useful in August and September.

Body: Some light quill dyed in Judson's light brown. Very good imitations have been produced by taking ordinary peacock quill and bleaching it.

Legs and Whisks: Ginger.

Wings: Medium starling.

Hook, oo.

XIII. THE INDIAN YELLOW.

Body: A delicate brown silk ribbed with bright yellow.

Legs and Whisks: A rich buff.

Wings: From the under wing-feathers of a *young* grouse.

Hook, oo.

This fly has a very prominent reddish brown head, which may be imitated by a couple of turns of dark orange silk.

The grouse feather is the right colour exactly, but it is very soft, and makes a poor wing for floating. It is a pity some other blue feather cannot be found suitable for this fly and the next.

XIV. THE BLUE-WINGED OLIVE.

This fly is larger than most of the duns of the summer months, and generally makes its appearance just at dusk, when it sometimes comes out in myriads.

At Winchester in September I have seen the river covered

with it, and rising fish only a few yards apart as far as one could see. Some of the heaviest fish I have ever killed in Hampshire have been taken with this fly; still I have never been satisfied with any of the imitations I have yet devised.

> The body is of delicate greenish olive, legs a pale watery olive, and the wings distinctly blue, like those of the Indian yellow. I have made the body of silk, wool, dyed fur, ribbed with gold, and with quill of different sorts. I hope some day to hit off the right shade in dyeing fibres of the condor's wing feather, and also to discover what will make the best wing. Possibly the blue feather from a merlin hawk's wing might do, or perhaps the coot's wing might solve the mystery. It must not be a soft feather which sucks up water and gets sodden directly, for the natural fly sits up and rides cockily on the water, and no half-drowned imitation can ever do much execution. I am convinced we have not got the right pattern yet.

Hook, o or oo.

XV. THE LITTLE SKY BLUE.

This is a splendid grayling fly in August and September; in fact, all free-rising fish take it well in the warm autumn mornings from ten to midday.

Body: Pale straw colour, of silk, quill, or fur. I have killed well with all three, but silk I like least, as it changes colour after it is wet much more than other materials.

Legs and Whisks: Light honey dun.

Wings: A pale delicate blue, best imitated with a jay's wing feather.

Hook, oo or ooo.

XVI. THE RED TAG.

This is generally regarded as a grayling fly, but at times it does wonderfully well among trout. The brighter the day and

the hotter the sun the better does this fly succeed. It is not generally known that when trout are 'smutting'—i.e. feeding on that tiny black midge which baffles all imitation—they will often take a small red tag ravenously. On one of the hottest days in August 1884, fishing at midday, I hooked eight large trout with the red tag, and this on a piece of water which it was usually considered hopeless to fish before dusk. As for grayling, when they are lying basking on the gravel in about two feet of water, the red tag will almost always bring them up. I have had splendid sport with it on many occasions. This is the dressing:

Body: Peacock herl, short and fat, with a tiny red tag of floss silk, wool, or scarlet ibis feather. Floss silk looks very well when it is dry, but it shrinks up when wet, and often loses its colour; I have always found wool much more killing.

At the shoulder should be wound a dark, rich, red hackle.

Hook, o, oo, or ooo.

XVII. THE JENNY SPINNER.

(Fig. xvii. p. 344.)

This is the transformation of the iron-blue dun, and is one of the most beautiful and delicate flies to be found by riverside. It is often seen dancing up and down in thousands after a hot day, and the fact that it is by no means uncommon on rivers where the iron blue is scarce, leads me to think that some other summer duns (possibly the little sky blue) turn to this delicate transparent spinner. It is impossible to see it on the water, and at best it is a most difficult fly to imitate. For these two reasons sport with it is somewhat uncertain.

It should be dressed with a detached body of white horsehair tipped with a couple of turns of mulberry silk and white whisks. Tie the body to a oo or ooo hook with mulberry coloured silk to show the head and thorax

of that colour. Wing it with two hackle points from a very pale blue dun cock, almost white, and let the legs be of the same colour. Or it may be dressed buzz with a pale grizzled hackle, like the red spinner, No. 6.

XVIII. THE INTERMEDIATE.

(Fig. xviii. p. 344.)

I use this name to denote a class of delicate flies which I use with considerable success in summer fishing.

Everyone must have noticed how the different duns seem to run by different gradations from one kind into another, so that sometimes a fly picked off the water cannot definitely be named according to any of the standards of classification, and yet it bears a considerable resemblance to several flies we are accustomed to call by name. I have found it very useful to tie various horsehair detached bodies of pale and delicate tints, and then match these with wings and hackle; choosing different shades of honey dun, light buff, or olive for legs, and varying the colour of the wings so as to suit the rest of the fly.

I take immense pains over these patterns, and, by constantly studying the changes in the natural insects, am enabled to produce delicate and life-like artificials which frequently bring a good fish to my basket after he has steadily refused to be tempted by other flies.

This list is, I think, comprehensive enough. Some will think it needlessly long, and others will miss some favourite pattern of their own special fancy. But, in giving my opinion on the subject of flies, I have described those which my own book contains, and a supply of which I always like to keep up to working order. If they are dressed of suitable size, and are used with fine gut, they will suffice to give sport if sport is to be had. Anyone who fails with such a list as this will, I am convinced, find fly fishing generally an unprofitable pursuit.

H. S. HALL.

MAY-FLY FISHING.

THE true May-flies of the British angler belong to the order *Neuroptera*, to the family *Ephemeridæ*, and to the genus *Ephemera*. In the majority of the colder and more rapid English streams, such as the Test or Itchen, *E. danica* is the predominant species, while in the more sluggish rivers or lakes *E. vulgata* is commonly found, and more rarely *E. lineata*. These three—the only English species—may be recognised by minute differences in size or colouring, slight variations in neuration of wings, or in the markings of the thorax or abdomen, &c., all of which are no doubt of considerable value to the scientific entomologist, as enabling him to separate the species, but are of no practical use to the angler for the purposes of his sport. When he finds in this country one of the Ephemeridæ of large size, with wings erect dotted with four or five dark spots and tinged with a delicate shade of yellowish-grey green, with body of a pale straw colour marked in the lower segments with a few brown streaks, the thorax of a deep brown-black with a pale sepia blotch in the middle of the back, and the three setæ of nearly equal length, and especially if he finds this insect on the water at the end of May or early portion of June, he may be certain that it is a specimen of the Green Drake, or subimago of one of the above-named three species. Having once seen the subimago, he will find no difficulty in recognising the same insect after the further metamorphosis to the imago, Spent Gnat, or Black Drake.

Not only are the three species so closely allied and so similar in appearance that, for all angling purposes, the imitation of any one is quite near enough to serve as an imitation

of all, but, beyond this, their life-history is, as far as known, identical, whether in the immature larval stages when under the water; or the subimago rising from the surface of the stream and flying to the shore; or the perfect insect, the imago, under which form the reproductive functions are exercised.

The eggs, when deposited on the surface by the female imago, sink to the bottom of the river, and after the lapse of a certain time the young May-flies are hatched out in the form of tiny active larvæ. It is probable that the comparative temperature and depth of the water, and the surrounding circumstances tending to increase or diminish the quantity of light and sunshine, may have some effect in retarding or advancing the period intervening between the deposition of the eggs and the birth of the larvæ. Having succeeded in hatching the eggs of *Ephemera danica* in captivity, I am in a position to give some precise data, which, however, must be taken as showing the result only with this particular species under particular conditions of light and temperature. A number of eggs taken on June 9, 1887, hatched on August 15 in the same year, a period of sixty-seven days.

The new-born larvæ at once commence digging their way into the mud by means of their tusk-shaped mandibles and forelegs, and form tubular horizontal galleries of a diameter only slightly greater than that of their bodies, but, according to the observation of Pictet, not sufficiently large for them to be able to remain in these retreats while growing. As they increase in size they desert the galleries previously dug and form fresh ones; as, however, they always affect water of a certain depth, in rivers subject to sudden floods they are obliged to change their quarters from time to time in order to preserve these conditions.

As the larva grows it sheds its outer skin many times, some further development of the various organs taking place with each moult. The entire larval existence is passed in comparatively still portions of the stream, buried in the mud at a depth

varying according to the temperature; thus, in very cold weather it has been found burrowing more than three feet in the river-bed, in the early spring at a depth of about eighteen inches, while at the commencement of June it is only an inch or two below the surface. It is quite possible that this statement may give rise to some controversy, and instances will be given of these larvæ being found in fast-running stickles, or shallows, and on hard clean gravel, and on this evidence anglers will be asked to discredit the careful observations of naturalists repeated over and over again during the last century. There is, however, no doubt that some considerable number of May-fly larvæ are from time to time found in rapid water where there is not sufficient mud to cover them. This seeming anomaly is, to my mind, quite capable of being explained. Every flood, every cleaning of the river, every disturbance of the mud, and every cutting of the weeds must of necessity set adrift a certain number of larvæ; these are unable to progress against or even across the stream, and the moment they find they are being carried down, instead of exhausting their strength by vain efforts to stem the current, they let themselves sink to the bottom, and crawl along until they find a suitable place, in which they once more commence their burrowing operations. Hence the occasional presence of larvæ on hard gravelly scours; and, of course, the greater the number of May-flies on a river, and the more frequent the causes of disturbance, the more numerous are likely to be the occasions on which the larvæ and nymphs are found on what must be considered unsuitable ground.

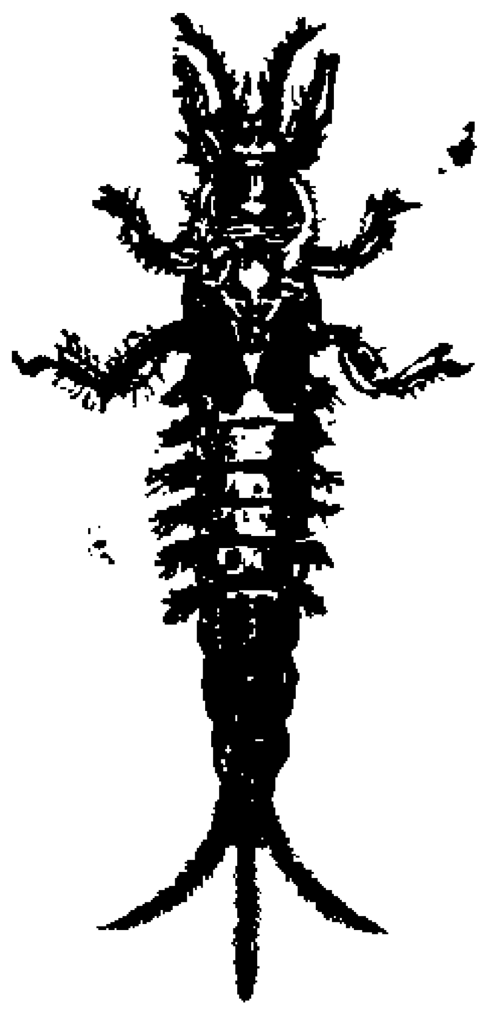
After a certain number of moults the wing-covers attached to the thorax become visible; at first they are transparent and very small, but gradually grow larger and become darker in colour as the development of the wings folded up within them progresses. From the time of the first appearance of the wing-covers the name *nymph* is applied to the immature insect, but, beyond that it has grown larger and slightly darker in colour, and that the mouth organs and branchiæ are further developed,

it has altered very little in appearance from the new-born larva.

Before treating of the next change, from nymph to subimago, there are two points requiring consideration, and on these two points, unfortunately, very little reliable information can be obtained. They are—*firstly*: the length of time intervening between the depositing of the eggs and the appearance of the winged subimago on the water; and *secondly*: the nature of the food on which the insect subsists during the larval and nymph stages.

When, with the kind assistance of a friend, I first succeeded in hatching May-fly eggs in captivity, we entertained strong hopes of being able to work out these two important questions of the life-history. Much time was consumed in daily microscopic examination of the eggs as the gradual development of the embryo proceeded. To provide as far as possible in captivity the same circumstances and the same surroundings as the larvæ would have experienced in the natural state, mud, gravel, and weeds from the river were distributed in the troughs in which the eggs were hatching. A grave cause of anxiety was that, of course, we could only use London water, and very possibly in the filtration which it undergoes the most necessary food for the young larvæ might be removed. All our efforts, however, were in vain. In a few weeks, out of many hundreds of thousands of eggs hatched not a single living specimen could be found.

LARVA.



NYMPH.

Although much disheartened at this first failure, and having been in two consecutive seasons since prevented from trying the experiment again, I do not confess myself beaten, and fully expect some day to succeed in rearing full-grown May-flies from

eggs hatched in captivity. It is perhaps some encouragement to find that Pictet, who spared neither time nor trouble in carrying out his most valuable experiments and observations, and who, besides, lived in Geneva, with an inexhaustible supply of pure water from the lake and the Rhone at his door, seems equally to have failed in this respect. He says: 'Il est difficile d'avoir des idées précises sur le temps qui s'écoule depuis la naissance des larves jusqu'à leur métamorphose. Swammerdam donne aux larves de la *Palingenia longicauda* une durée de trois ans, et Réaumur pense que celles de la *P. virgo* vivent deux ans. Je n'ai pas pu faire sur ce sujet des observations directes, parce que les larves de *l'Ephemera vulgata*, les seules que j'aie pu observer moi-même dans cette division des larves fouisseuses, sont très difficiles à élever longtemps, et que je n'ai jamais pu les conserver plus de quelques mois.'

There are, however, sufficient data to justify the positive statement, that not less than two years elapse between the laying of the egg and the appearance of the winged subimago on the water. Every year since 1886 I have searched in the mud during the drake season, and have invariably found two sizes: one, quite near the surface—the nymph just on the point of changing to the subimago—and the other, much deeper in the mud, a half-grown larva without any trace of wing-covers. In no single instance was a larva found either in an intermediate stage or smaller than the half-grown specimens, and hence the evidence may, I think, be deemed sufficient to establish the fact that the time occupied in the growth of the winged insect from the egg is two years, and no more.

As to the food question. Pictet declares that he has discovered remains of small insects or aquatic worms in the alimentary canal of the larvæ. An earlier authority—Swammerdam—says that he has only found 'terre glaise,' or clayey earth. Pictet's observations are, as a rule, so accurate and so reliable that it would be an act of presumption on my part to cast the least shade of doubt on any word he has written, yet, as far as my own experience has gone, a number of autopsies

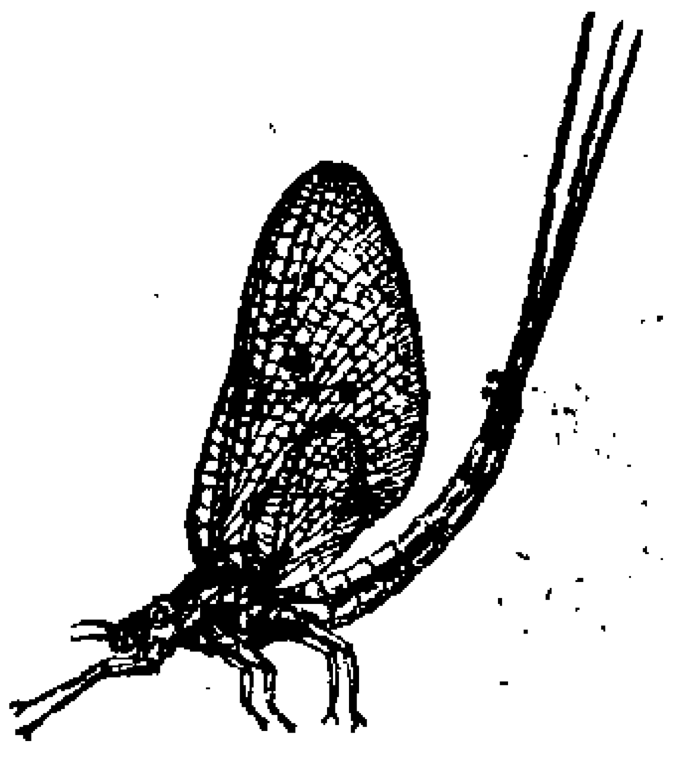
performed at various times, and many microscopic examinations of the larvæ in various stages of preparation and mounting, have failed to bring to light anything beyond semi-digested vegetable and earthy matter. Yet the formidable mandibles of the larvæ and the other fully developed mouth organs seem eminently fitted to deal with living larvæ or insects, although Pictet throws doubt on this use for the mandibles, as he distinctly states, when speaking of the galleries in the mud in which the larvæ live—'Elles fouissent avec leurs mandibules et leurs pattes antérieures, un peu semblables à celles des courtilières.'

The nymph having now arrived at the period of its existence when it is on the point of undergoing the metamorphosis from larva to subimago, is worthy of careful examination. It has at this stage, when viewed under the microscope, a very curious appearance. The outline of the nymph itself is unchanged, but the entire margin, whether of body, legs, or setæ, has a semi-transparent appearance, within which is seen a dark opaque insect, very similar in contour to the nymph itself, but more slender in all its proportions. The head with the antennæ and eyes, the thorax and legs, the abdomen and setæ, are each distinctly visible within the corresponding organ of the nymph; and the wings are neatly folded up and packed inside the wing-covers.

Submerged about an inch under the mud, generally among the roots of the weeds, the nymph works its way out of the soil and rises in a series of jerks to the surface of the water. On arrival there, under normal circumstances, the larval skin is split longitudinally up the back of the thorax by a violent effort; through this aperture the thorax of the subimago first protrudes, followed by the head; next the legs struggle out; the abdomen and setæ are then drawn out, and lastly the wings emerge one after the other from the wing-covers, and are unfolded and extended. The subimago remains a few moments floating on the surface of the water, or supported on the nymph-shuck, until the wings are dry, and then, as the Green Drake,

flutters before the wind in a heavy laboured flight to the shore, unless in the meantime it has fallen a prey to one of its many enemies among the fish or the birds.

The above is the natural order of the metamorphosis under normal circumstances, but very frequently the exact sequence is destroyed by some slight accident or mishap. Thus, as an example, some nymphs will reach the surface too soon, and float many yards down before the splitting open of the larval envelope can be accomplished; others, again, will have partially or even entirely emerged from the shuck before reaching the top of the water, and may possibly be drowned or fatally crippled in the wings. Again, in many ways the order in which the various organs will become detached from the exuvium can be altered: the wings may be drawn out of the covers before the abdomen and setæ leave the larval skin, or possibly one or more legs on one side may get entangled, to extricate which a very decided effort may be required.

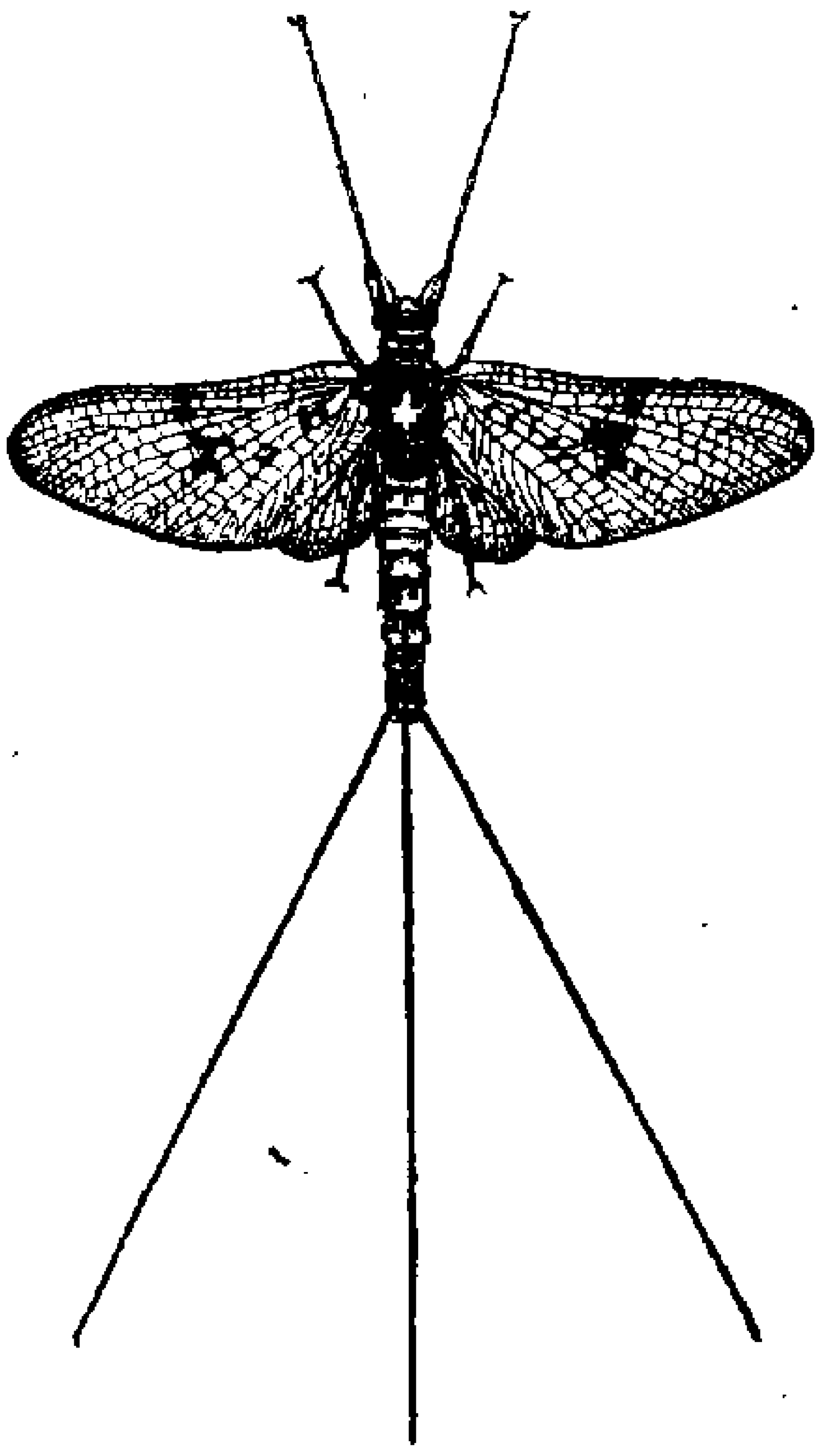


SUBIMAGO.

Such organs as are only of use in the mud or the water are shed with the exuvium; among these may be noted the mandibles, the powerful digging claws, and the branchiæ, whose function it is to separate from the water the air required by the nymph for respiratory purposes. The hairs which fringe the antennæ, legs, body, and setæ of the nymph are absent from the winged insect, the antennæ are much shortened, and the mouth organs are generally atrophied. The setæ of the subimago are somewhat longer than those of the nymph.

The subimago having flown ashore, finds shelter from the sun on blades of grass, sedges, or among the leaves of trees, and after a period of from twenty-four to thirty-six hours—the length of time being greater or less according to the temperature—the final change to the imago or perfect insect takes place. As a preparatory step, the subimago fixes its claws firmly to

some solid body, such as a wall, or post, or bough of a tree; its outer skin is then distended and splits up the back, the head and legs are drawn out, then the abdomen and setæ, and lastly the wings. As the wings of the imago are withdrawn from the outer skin which formed the exterior surface of the subimago wings, these latter collapse at once, so that the exuvium left by the imago has, to a certain extent, the same outward appearance as the nymph-shuck, the most apparent distinction between them being the presence on the nymph-shuck of the branchiæ, arranged on each side of the back of the abdomen at the joints.



IMAGO.

The hairs with which the surface and margins of the sub-imago wings were covered are absent from the imago; the setæ and forelegs in this last metamorphosis have become much longer, and this increase is more marked in the males than in the females. Thus, according to the dimensions given in the Rev. A. E. Eaton's 'Revisional Monograph of Recent Ephemeridæ or May-flies,' the most modern and reliable entomological work on the subject, the setæ of the female increase from about 16–19 mm. in the subimago to 24–26 mm. in the imago, while in the case of the male the setæ, in the subimago measuring from about 17–21 mm., extend to as much as 36 or even 41 mm. in the imago.

The male imagines are seen dancing up and down in the air in clouds, and the moment a female appears a number of them start in pursuit of her. Sexual intercourse takes place in the air during flight, the male lowermost. To quote the words the Rev. A. E. Eaton:

'Darting at his mate from below, and clasping her prothorax

with his elongated foretarsi (whose articulation with the tibia is so constructed as to admit of supination of the tarsus), he bends the extremity of his body forwards over his back, grasps with his forceps the hinder part of her seventh ventral segment, and with his outer caudal setæ embraces her sixth segment. These two setæ exhibit near their origin a strongly marked articulation, where they can be deflected abruptly so as to lie forwards over the back of the female, parallel with one another between her wings. Meanwhile the couple gradually sink, the female not being quite able to support herself and mate, and by the time they reach the ground, if not before, their connection is usually terminated.'

The fecundated female, after resting awhile, repairs to the water and, hovering over it, just touches the surface from time to time as she drops part of the eggs.

The only purpose for which they seem to have existed in the winged state, viz., that of perpetuating the species, having been accomplished, both sexes fall almost lifeless on the water, with their wings extended and lying flat, and at this period of their brief existence are usually designated by anglers the *Spent Gnat.*

The immature May-flies at the earlier stages being burrowing larvæ living in the mud ('*larves fouisseuses,*' as Pictet styles them), do not to any great extent serve as food for the fish. A certain number are occasionally found during the spring in the stomachs of trout, but it is probable that when an autopsy reveals the presence of any considerable number of these larvæ, it is due to some disturbance of the mud of the river having set the larvæ adrift, and, naturally, a hungry trout finding a quantity of palatable food such as this within his reach would, if possible, gorge himself with it. I know, from undoubted evidence, that from one fish in the Kennet more than one hundred May-fly larvæ were taken in spring, but considering the enormous quantity of May-fly present in this river, it is not surprising that after a flood or during weed cutting a fish should find hundreds of larvæ helplessly carried along by the stream.

The first stage at which the trout can get the chance of

feeding freely on the Ephemera is when the nymph is working its way out of the mud and swimming to the surface of the water for the purpose of effecting the transformation to the subimago. When this first occurs the fish seem afraid of an insect so much larger than the forms of life which have previously formed their staple diet. After a time, attracted by the great quantity of these creatures, they gradually become bolder, and, after trying an occasional one and finding them to their taste, soon commence to chase the active nymphs, taking them eagerly, with a loud splashing noise and much movement beneath the surface of the water. Before long a fish in the act of seizing the nymph is surprised to find it elude his grasp, and to see the winged insect emerge from the shuck on the surface of the stream and leave the empty exuvium behind. The next time this happens he will possibly take the subimago, and thus he gets his first impression of the May-fly itself. This exuvium must, however, be a succulent morsel, as not infrequently the fish will take it in preference to either the nymph or the subimago.

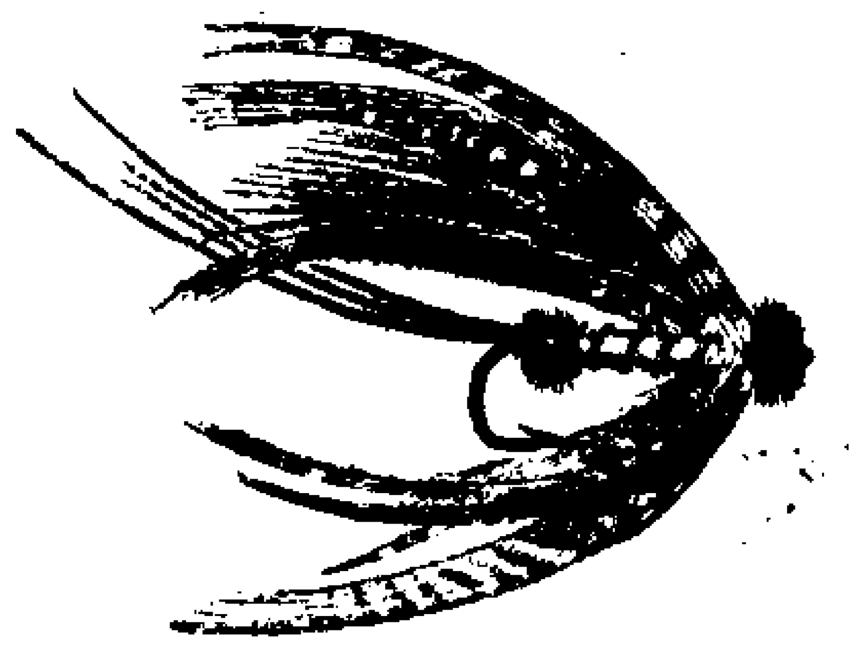
If only fishermen could be persuaded to leave the trout alone at this stage, they would in a few days get thoroughly well on to the Green Drake, and feed on the floating fly with a sense of security. It is, however, vain to indulge in any hope of inducing the modern school of anglers to practise this degree of patience and temporary self-denial, although if they would only once try the experiment their sport would no doubt be so improved that they would have no cause to regret it. As it is, every proprietor or lessee of a fishery, and equally every member of a club or subscription water, expect the keeper to send them a telegram at the very first sign of a May-fly. Without a moment's delay, each and every one of them must postpone every engagement made, whether business or social, and hurry down to the river-side. At once the eager angler must put up his favourite pattern and keep casting it over the feeding fish: a few—very few—he kills, some he pricks, and many more he makes so shy that they will not rise for another week, and thus

never do get thoroughly well on to the fly at all. As well might one try to stem the rising tide as hope to convince fishermen that it is good policy to leave the trout alone and let them feed in safety for a few days on the winged insect ; and as, above all, it is my desire to make this chapter of practical use, I suppose it is necessary to pander to the taste of the fly fisherman, and try to teach him how to catch the trout while they are taking the nymph.

It is not difficult to discriminate between the rise of a trout taking the May-fly itself on the surface of the stream, and the movement of one taking the nymph swimming upwards through the water. When feeding on the nymph the fish is *bulging*, that is, darting backwards and forwards, to the right and to the left, driving a heavy wave before him and making a loud flooping noise as he snatches at his prey, but very seldom taking it on the surface. On the other hand, when taking the subimago he is poised close to the surface, in midstream occasionally, but more generally on the edge of a run behind weeds, or in a favourable corner close under the bank, quietly and gently sucking in flies one after another as they sail smoothly down over his nose.

When the fish are bulging, perhaps the best pattern of all to use is a hackle fly dressed as follows :—

Hackle : A well-marked darkish feather from the breast of an Egyptian goose. If one is insufficient, use two.



Body : Pale maize-coloured floss silk, ribbed with a strand of peacock herl of a pale cinnamon colour at root—the pale portion of the herl at shoulder, and the metallic point showing about three turns of dark rib at the tail end. A strand of white condor with blackish point is perhaps preferable, and certainly stronger.

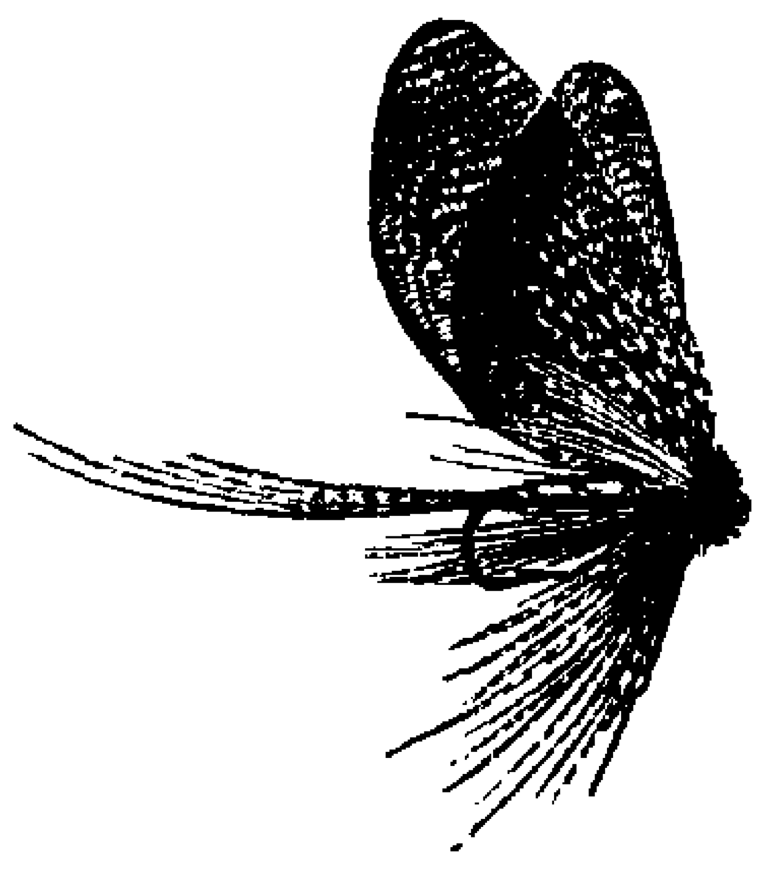
Whisk : Three or four strands of brown mallard.

Hook : 3 or 3 long.

It is a difficult fly to dress owing to the stubborn nature of the Egyptian goose hackle. The accompanying plate gives a good illustration of the size and general appearance.

This fly should be fished floating, but not too dry, as it is intended to imitate the subimago when only partially withdrawn from the shuck, but not altogether clear of it.

If the Egyptian goose pattern is not successful, the following may be tried :—



Wings : Rouen drake dyed a somewhat brown green. This shade is usually known as the 'Champion,' being the colour of the wings of a pattern the late John Hammond of Winchester dressed, and called by this name.

Head : Bronze peacock herl.

Hackles : The first a grey partridge dyed in strong tea, and the second a pale ginger cock.

Body : Straw or maize husk, ribbed with fine flat gold and crimson tying-silk.

Whisk : Brown mallard.

Hook : 2

Over bulging fish it should be fished only moderately dry, and flat, not cocked. The same pattern fished quite dry and cocked is a very good one—in fact, perhaps the very best—for fish taking the Green Drake.

It may be varied by omitting the tinsel and ribbing the body right down from shoulder to tail with the crimson tying-silk and ginger hackle.

With these two patterns of Champion, and, for a change, one dressed precisely like them, but with the wings dyed of a more greenish hue, and the two following imitations, any fisherman can travel all over the kingdom, and kill the trout wherever and whenever they are really feeding on the subimago :—

Wings : Canadian summer or wood duck.

Head : Bronze peacock herl.

Shoulder Hackle: Hen golden pheasant.
Ribbing Hackle: Pale ginger cock.
Body: Straw or maize husk, ribbed with crimson tying-silk.
Hook: 2 or 3.

Wings: Rouen drake, undyed, which is better than the ordinary mallard wing, as the markings are more distinct.

Head: Bronze peacock herl.

Shoulder Hackle: Hen pheasant, slightly dyed a pale medium olive.

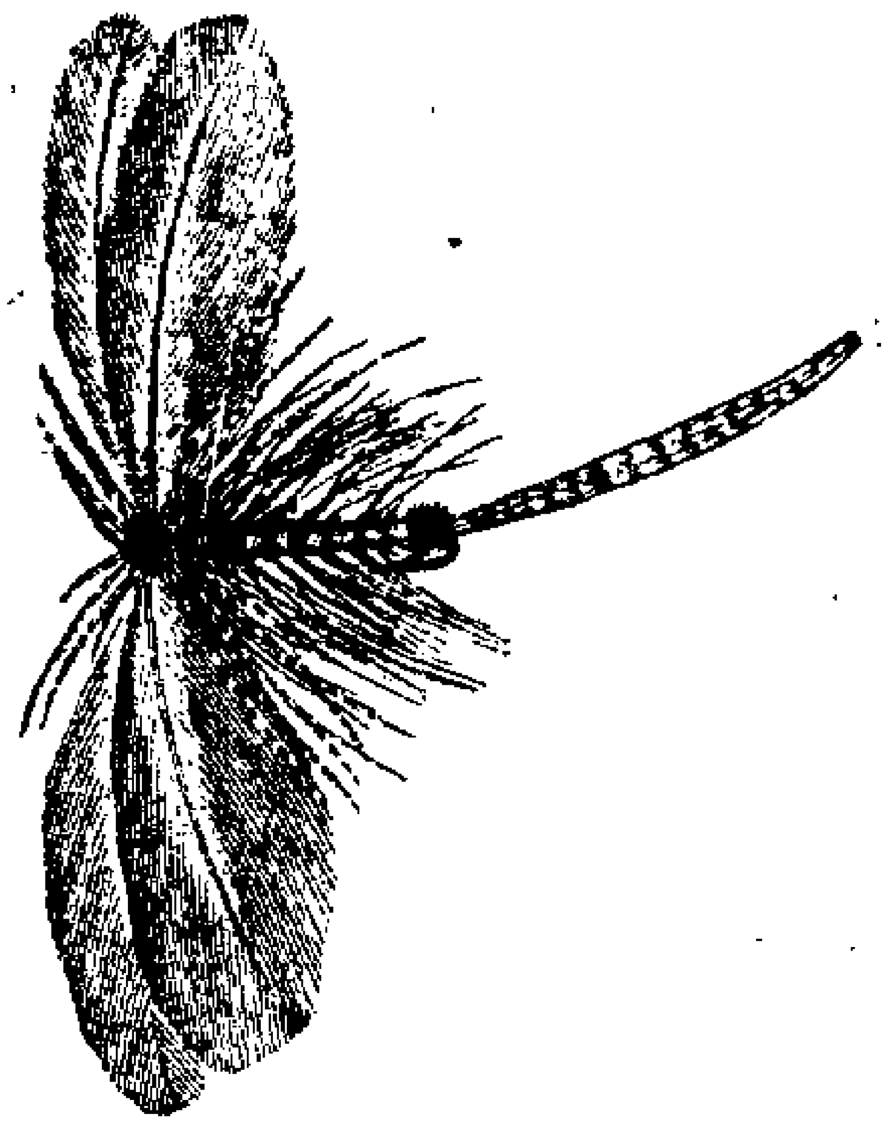
Ribbing Hackle: Blue Andalusian cock.

Whisk: Brown mallard.

Body: Straw or maize husk, ribbed with pale olive tying-silk.

Hook: 2 or 3.

For imitating the spent gnat there is no pattern to approach Mr. Marryat's, dressed as follows:—



Wings: Four dark grizzled blue Andalusian cock hackles set on horizontally quite flat, and at right angles to the hook-shank. If dark Andalusian hackles are not obtainable, it is far better to use ordinary black hackles than light duns.

Head: Bronze peacock herl.

Shoulder Hackle: Grey partridge.

Ribbing Hackle: Badger.

Body: White quill or white floss silk, ribbed with a strand of peacock herl which is cinnamon-coloured at root and dark at point, or condor, as in the Egyptian goose pattern, the dark portion showing about three turns at the tail end of body.

Whisk: Brown mallard.

Hook: 3 or 3 long.

The sizes of hooks given in all the above patterns are those of the ordinary eyed hooks.

A few words will suffice to indicate the rod and tackle which will be found most serviceable for this class of fishing. A moderately stiff single-handed glued cane rod of eleven feet, in two or three joints, will be a far more comfortable weapon to wield than any double-handed one, although if there are any conditions under which a double-handed rod could be preferred, it would be when fishing the floating May-fly; yet it is not so handy to use, cannot throw any longer distance, and is powerless against the wind when compared with the single-handed rod. If the built cane be deemed too expensive, a greenheart rod of the same length and character can be substituted. A good bronze or ebonite revolving-plate reel, large enough to hold at least forty yards of line. A pure silk solid plaited line, moderately stout and parallel through the central portion, but tapered for the last five yards at each end; this dressed in pure boiled oil, according to Mr. Hawksley's improved plan, and occasionally rubbed well over from end to end with red deer fat to make it float. Gut cast not too fine—in fact, moderately fine undrawn for the point, tapered gradually to quite stout trout gut at the loop by which it is attached to the reel line. With landing net and basket, the gear is complete.

As to hooks, the argument that is applicable to show the advantage of the eyed hook for small flies is strengthened tenfold in regard to the larger sizes. I would, however, offer one word of counsel: do not be persuaded to buy May-flies dressed on hooks any larger than those specified for the patterns given, nor, in fact, for any May-flies. Nos. 2, 3, and for the outside limit 3 long, are quite large enough. A small May-fly will often hook and kill a fish which will only splash at and refuse one of the monstrosities frequently foisted on the unwary by the tackle-makers.

Having rod, line, cast, and fly together, the next point to consider is how to use them. I would premise that, without wishing in any way to be dogmatic, all the experience gained during many years has tended more and more to convince me

that, whatever may be the case with imitations of other Ephemeridæ, with the May-fly it is of the greatest advantage to fish dry or floating. The only stages at which it is possible for the natural May-fly when taken by the fish to be entirely submerged is in the nymph state just before changing to the subimago, and the spent gnat, which when quite dead may possibly, after some lapse of time, become sodden and sink, although on this latter point I am inclined to think that it is far more likely to shrivel up and become disintegrated on the surface of the water. If, however, the angler desires to fish it under water or sunk, he must omit that part of the instructions relating to drying the fly.

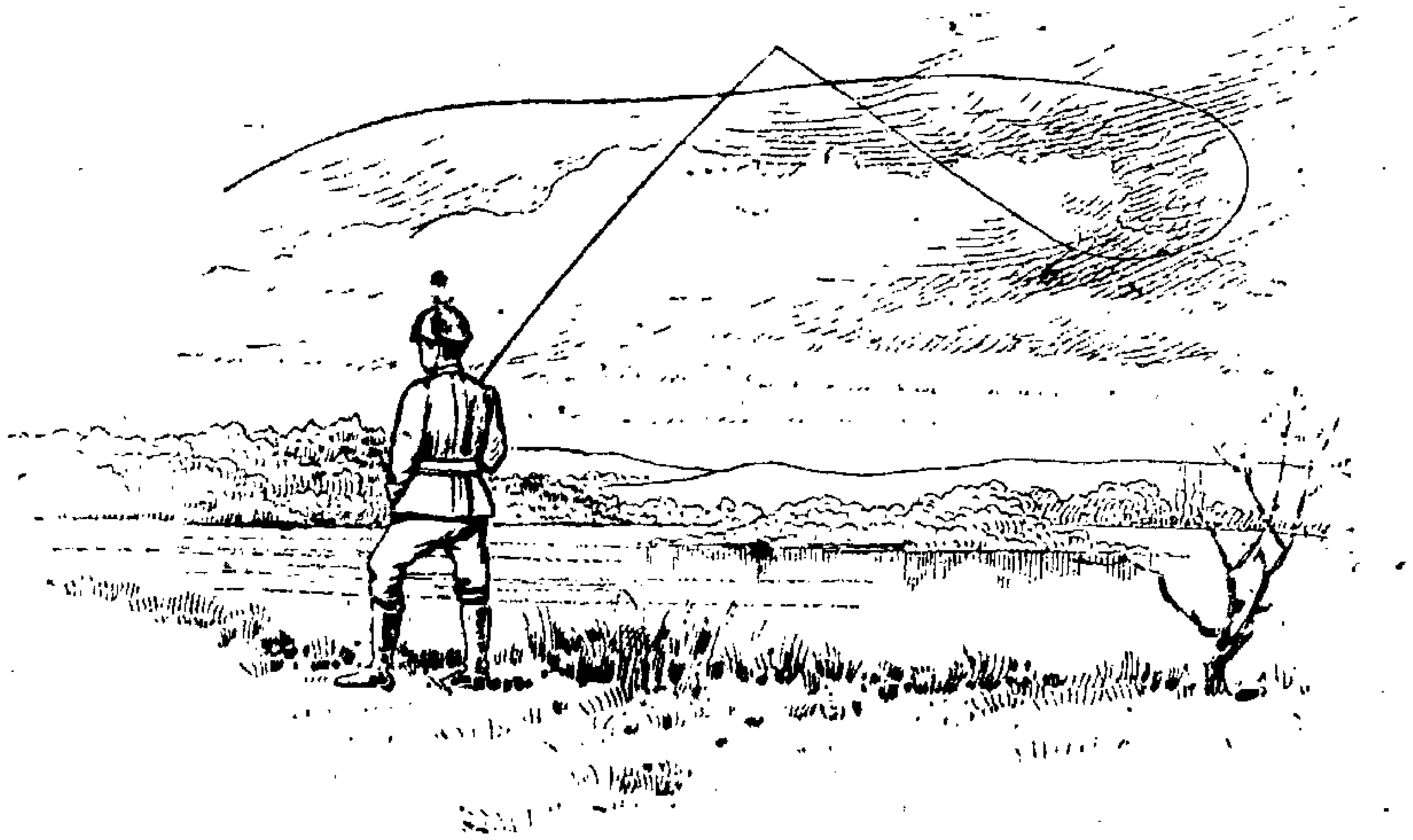
The first cast to learn is the ordinary *overhanded* one, in which the hand holding the rod is raised so as to carry the rod backwards a short distance beyond the perpendicular, feeling the line all the time, and, after a decided pause, just as the weight of the line commences to bend the rod-top backwards, the hand is brought forward and down again with a slightly increased velocity. The motion of the hand throughout is smooth and without jerk, and should describe a slight curve—the object of this curve being to prevent the line when travelling backwards from coming in contact with the rod, or the line itself when coming forward. If the fly is dry the cast on the water may be at once completed, but if not, the backward and forward motion must be repeated a sufficient number of times to thoroughly free the hackles and wings of the fly from moisture. At times some difficulty is found in drying a May-fly sufficiently. In this case one of two things has probably happened: either the fly is thoroughly sodden, when it is as well to put up a new one, and leave the other to dry in your hat, after coaxing the wings, &c., into position with your fingers; or the wings have got turned down and caught under the bend of the hook, when the fly will neither dry rapidly nor float well. As the hand comes forward the rod-point must be lowered, and the line delivered at a level of about a yard above the water. The hand is then slightly checked, and the fly falls lightly and

without splash. The checking of the hand serves a twofold purpose: firstly, causing the fly to land on the surface without disturbance, and secondly, delivering it with plenty of slack line, which, as shown later on, will prevent or retard its dragging.

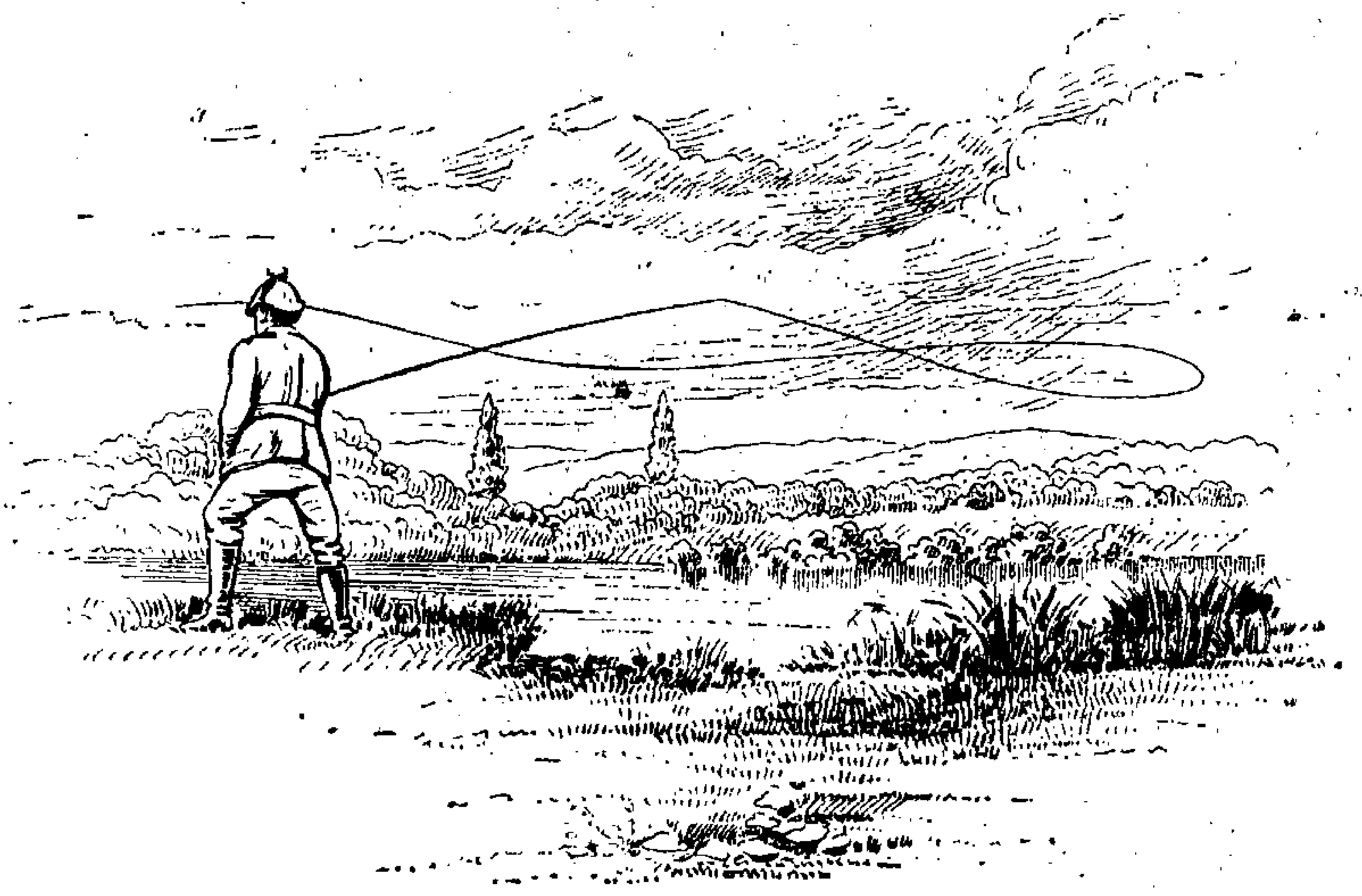
If it is necessary to make a very long cast, the hand when travelling back must be raised above the level of the head, so as to lift the line as high as possible behind. This is called the *steeple cast.* It may be laid down as an axiom that the distance an angler can cast is limited by the length of line he can keep in the air behind, with the addition of a few yards he can *slide* from the hand while delivering the fly; hence the advantage of steepling when trying to make an extra long throw. It is also necessary to steeple when there is a bank or bushes immediately behind the angler; even with very long grass it is often useful.

If the wind is dead in the face of the fisherman he must use a somewhat shorter length of gut and follow the previous instructions for casting, up to the point of delivering the fly; but when the arm attains the angle of 45° with the plane of the water it must be well extended, the knuckles turned down, and a cut made downwards and towards the body, the elbow being at the same time raised and the rod-point carried down to the level of the water. If accurately timed, this back motion acts as a check, and the result is that the line is extended in the teeth of the wind, the fly travelling out straight, and falling lightly and without disturbance. This is called the *downward cut.*

For fishing against a very light wind, or across any breeze short of half a gale, no style of casting is to be compared with the *underhanded* or *horizontal cast.* As may be inferred from its name, it is a cast made underhanded or with the rod held in a horizontal position. The movements are precisely similar to those of the overhanded cast, except that the rod is in a horizontal instead of a vertical position, and the motion of it is in a direction parallel to the surface of the water instead of at right angles to it, as in the case of the overhanded cast.



OVERHANDED CAST.



UNDERHANDED CAST.

The line should be returned *under* and delivered *over* the rod. To give a fair indication of the difference of position of the angler, his rod and line, the accompanying plate (page 367), shows in outline their relative positions, one in the overhanded and the other in the underhanded cast.[1]

There are many good reasons why the underhanded cast should at all times, where practicable, be used by the angler who desires to be successful. With it he can throw against a moderate wind or across a strong one, and his fly will in the majority of cases land on the water *cocked*, or floating with its wings up in the natural position. This last is a very essential and important point when dealing with shy fish, and with no fly and in no style of angling to so great a degree as with the May-fly. Besides these advantages, there is another which, if possible, is even of greater consequence than either, viz., that with the horizontal cast the fisherman himself will work more easily keeping quite low down, and, whether returning, casting, or drying the fly, neither his rod nor its shadow is ever nearly so visible to, and consequently likely to scare, the fish.

There are only two difficulties to overcome when commencing to learn the underhanded cast. The first is to get over the cramp caused by the alteration in position of the hand and the strain on a set of muscles which are scarcely used at all with the overhanded cast. The second, that from the fact of the rod-point, and therefore the fly, travelling along the arc of a circle of which the hand is the centre, and the plane of which is parallel to the plane of the water, it is far more difficult to place the fly accurately over the rising fish than with the ordinary overhanded cast, when it is directed in a straight line down on to it. Both of these difficulties are, however, overcome by practice and perseverance, and having once mastered this cast, the angler will never fail to use it in preference to any

[1] By the courteous permission of Messrs. Sampson Low, Marston, Searle & Rivington (Limited), these sketches are taken from the same instantaneous photographs as served to illustrate Mr. Halford's book, *Dry-Fly Fishing in Theory and Practice.*

other. It should also be noted that with this cast a fly can be placed under overhanging boughs, or up under a bridge, where it would be an utter impossibility to do so by any other means.

If the beginner finds that, without being himself able to specify the cause of his non-success, he is not progressing, and if he cannot get a friend who can cast to tell him of his faults, as a general rule, and in all styles of casting, he may safely infer that he is getting into the habit of either using too much force, or of casting and returning too quickly; very possibly he may be falling into both these errors.

Whenever possible throw up stream, and let the fly come down to you; the fish when feeding are invariably poised with their heads looking up stream waiting for the flies to float down to them, so that when fishing up you not only present the fly to the fish in the more natural manner, but being below them have a better chance of not being seen yourself. As the fly comes down to you, it is necessary to draw in slowly by hand a part of the slack line, otherwise this slack line on the water is likely to retard the effect of striking so much as to make you miss the fish. The line must not be drawn in too rapidly, or a decided pull or drag on the fly will be caused. Where it is impossible to fish up or across, the only plan is to *drift* from above or cast down stream; just as the fly is descending check it so that it falls short of the full cast, and, lowering the hand, then let it float down to and beyond the fish without drag before recovering. It should, however, be remarked that when drifting every angler must expect to miss a great proportion of the fish he rises, and, further, he must not be surprised to find that the first cast over a rising fish will in the majority of instances either rise him or set him down altogether.

There are in every reach of every stream places where the dry-fly fisherman may confidently expect success with a rising fish, and others where he may with equal confidence predict failure. As a fundamental principle, the artificial fly should float down to a feeding trout in precisely the same direction and at precisely the same pace as the natural one. This is merely tanta-

mount to saying that the object of a scientific dry-fly fisher should be to so manœuvre his artificial fly as to make it as far as possible copy in its movements, as it should in its appearance, those of the natural insect. The natural insect emerges from the nymph-envelope on the surface of the stream, and as far as it drifts down on the water is carried along at the same speed and in the same direction as the run in which it happens to be when first clear of the shuck. Under no condition is it very likely for a shy fish like a trout to take a fly deviating from this natural course, and the more a river is fished the shyer the trout become, and the less likely they are to forgive a mistake in this respect.

Wherever the run of the water has the effect of causing the artificial fly to *drag*, there the fisherman is likely to find himself foiled in all his efforts to rise the fish, and the place should, as a rule, be avoided. On the other hand, wherever the run of the water causes the artificial fly to follow exactly the course taken by the natural, there a rising fish is likely to be tempted by a good imitation delicately and accurately placed. As a general rule, wherever the action of the water on the line causes the artificial fly to deviate in pace or direction from that which the natural insect would follow in a similar position, a wake is produced behind the fly, and this is technically termed *dragging*.

There are three conditions under which dragging may take place. A fly may travel either faster or slower than the natural insect, or in a different direction from it.

The fly travels faster than the natural insect in a place where the angler has to throw across the stream, and where the most rapid portion of the current is between him and the spot where the fish is feeding. The fly then *drags* because the action of the stream on the line causes the fly to travel at the pace of this the more rapid stream, instead of at the rate of the portion of the river where the fly is floating. It further has the tendency of dragging the artificial fly more or less across the normal direction of the stream. This form of dragging can be

obviated, or at least delayed until the fly is below the feeding-place of the trout, by throwing the line in a curve with the convex side directed up stream, and until the pressure of the water has deflected this curve into a straight or concave line no drag can take place. In a very wide stream, with the current throughout nearly uniform in force, the same tendency to drag exists, and the same remedy can be applied.

Another place where the artificial fly travels more quickly than the natural insect is where the fish is rising on a smooth glide immediately above a rapid run, and in this case the drag can be delayed until the fly is below the fish by throwing a very slack line—that is, placing the fly with the last yard or so of the gut extended, and the upper part of the cast and a portion of the reel line loosely or in curves on the water. The check referred to in the instructions for making a cast is the most effective method of producing this result, and it is far easiest to accomplish when wading in a direct line below the fish.

If a fish is rising in a slow running bay, the artificial fly cast with a tight line will be carried down at the pace of the faster stream outside, and in this case again the slack line is the only means of preventing the drag. With a strong wind blowing straight up stream a fly cast in the ordinary way, and fished from directly below, will be dragged down by the extended line from the moment it reaches the water until it has floated a short distance, and thus left slack line below the fly. To prevent this keep the point of the rod well up until the fly has landed on the water, then at once drop the hand and rod-point so as to slacken the line.

When the lower part of the reel line lies on an eddy, it will cause the fly to drag by making it float more slowly than the pace of the stream. Slack line will naturally delay this. When drifting or using the half-drift, the line as it commences to tighten delays the pace of the fly, and thus causes it to drag. Plenty of slack, lowering the hand as the fly travels, and even walking slowly down the bank, will retard this.

In a small eddy where the natural insects float in a direction

opposite to the general run of the stream outside, a fly must drag; but in a large eddy it is sometimes possible to cast up the eddy and let the fly drift down it, thus placing oneself apparently in the position of throwing down stream.

Dragging owing to the fly drifting across the natural run of the stream is a very usual cause of non-success. Perhaps the strongest example of this is when casting to a fish rising under and close to the opposite bank: the moment the line is extended the fly begins describing a segment of a circle, of which the rod-point is the centre and the length of line the radius; and here, again, the slacker the line the longer the drag is delayed. It is strange how often fishermen fail to notice this class of drag, and wonder at their being unable to get an offer from a fish rising freely, and in a place apparently so favourable. It is in a case of this description that the advantage of a well-fatted line is most evident, as it floats down with the fly, while the ordinary varnished silk line sinks and causes the fly to drag.

The result of all consideration of the question of dragging tends in one direction, and the lesson to be learnt cannot be too strongly impressed on the minds of anglers who wish to be successful, and are therefore alive to the fact that to learn this or any other art they must continually study to find out their mistakes. One often hears approbation expressed of the casting powers of various fishermen; in the words of the majority of their admirers they are loudly praised for throwing so 'straight a line.' I cannot conceive a stronger condemnation. In almost every possible position where drag is likely to occur, the remedy suggested is a slack line, and I believe that the straight line is often a cause of failure in wet as well as dry fly fishing, the drag taking place beneath the surface of the water, especially in fast streams.

When to cast to a rising fish is at times important. In changeable weather, for example, select a moment when the sun is covered by a cloud; in hot bright weather wait, if possible, for a light puff of wind to ripple the surface. When

the natural flies are floating down in droves of some six or seven, with intervals, and especially in the case of the spent gnat, a trout will often take every one passing over him; in such a case do not select the interval, but rather strive to let your artificial fly come down the first of a drove. With very shy fish on a calm day taking only an occasional fly, it is sometimes a good plan to wait patiently, and just as he rises cast into the very ring he has made; if he misses the natural it is almost certain that he will come at the artificial, and even if not, he will often turn round and seize the imitation as well as the living insect. After such a fish has leisurely taken the fly and gone down into the weeds to ruminate is perhaps the very worst moment to select for throwing to him.

Above all, remember that the first cast over a rising fish, before his suspicions have been aroused, is the most likely one to kill him. If it were possible to gauge the probability of tempting a trout under any circumstances, and reduce the problem to a question of odds, I should say that if at the first cast the odds are three to one against rising the fish, at the second they are ten to one, and at the third or any subsequent cast fifty to one. If you wish to kill shy fish, take as your guiding principle that *delicacy and accuracy combined in the first cast*, before the trout has caught a glimpse of either the fisher or his rod, is the great desideratum.

Do not cast except to fish feeding or poised near the surface on the look-out for food. Mark accurately the precise spot of the rise, and when doing so do not forget that the ring made by the trout is carried down at the pace of the stream; thus, though you cannot place the rise too high, you may easily place it a yard too low down; and this is a fortunate circumstance, as it is a fatal error to make your first throw too high up and bring too much of the gut, and possibly part of the reel line, over your fish's nose. Crouch down and keep well out of sight; crawl up to the place from which you can most conveniently reach him. On a puffy day move during a catspaw, wait during the calm interval, and cast during the next catspaw.

Use the horizontal cast wherever possible, and at the first attempt place the fly, quite dry and *cocked*, lightly on the water so that it will float down over the feeding-place of your fish accurately and without drag. If you succeed in rising your fish, strike from the reel—that is, without holding the line in any way; remember it requires very little force to drive the barb of the hook home, and any excess is worse than useless. While playing your fish, keep on taking him down stream so as to drown him as quickly as possible, and at the same time take him away from his lair, where every impediment by the assistance of which he is likely to break you is well known to him. Do not attempt to net your fish until he is exhausted; the best indication of this is that he turns on his side on top of the water. More big fish are lost by premature attempts at netting than from any other cause. Sink the net deep and draw him over it, then gently raise the net and draw him ashore, but do not attempt to lift him out at arm's length. If sizeable, give him his *quietus* with one smart blow at the summit of the spinal column; if undersized, return him gently to the water.

If you cannot succeed in rising your fish, and determine to seek for one feeding elsewhere, retire from the water with the same caution you exercised when approaching; still keep well down, crouching or kneeling; again remember to move during a puff of wind and wait during the calm intervals, and altogether be most careful not to show yourself and thus make him still shyer than he is already, and this as much for the sake of the next fisherman who may try him as for your own. Note particularly that at all times when moving, whether crawling up to the water or beating a retreat from it, the slower and more deliberate the motion, the less likely you are to scare the fish.

Every one of the principles I have striven to inculcate apply with equal force to dry fly fishing of every kind and description, whether with duns, sedges, or May-flies, and most, if not indeed all of them, are equally applicable to trout fishing with the sunk or wet fly.

There are, however, certain special points and precautions necessary when fishing the May-fly. Remember that all the volumes of matter written to prove that May-fly fishing is an easy pursuit, to be followed in a *dilettanti* fashion, lounging along the river bank in full view of your fish, have no application to the chalk streams; that trout feeding on it are not, to use the witty expression of a first-rate performer, willing to 'take anything, *chucked* anyhow;' that during the drake season fish are just as difficult to catch and as unlikely to forgive a mistake as at any other time of the year. The largest fish in the river are generally feeding, and are the special objects of the angler's attention, and the larger the fish the more experienced and shyer they are likely to be, and consequently more easily scared or set down. The same accuracy, the same delicacy, the same freedom from drag, the same careful stalking, the same care to keep out of sight not only the angler, but also his rod and line, are just as necessary then as in any other part of the season.

Do not cast too frequently. If a fly floated accurately twice or thrice over a trout is not taken, either rest the fish until he has taken another natural fly, or, if too impatient to do so, go on to another, and return to him a quarter of an hour later on. During the rise of May-fly fish often take up their quarters in unexpected places; a very favourite one is in a small run between a weed patch and the bank, or in the slack water immediately below a bank of weeds, and, especially when taking the spent gnat, in almost stagnant water. In fishing stagnant places leave the fly on the water as long as it floats, as a trout will frequently cruise round and round such a place, and after some minutes suddenly come up and take your fly. Above all, do not neglect small carriers or tributary streams, as the very largest fish are occasionally killed in them with May-fly. When taking the spent gnat trout generally travel more or less, and it is well to note the direction in which they are moving when they rise at the natural, and cast well above in that direction. Note that the very best conditioned and largest trout in a river

generally feed on the spent gnat, and rise very quietly and with no more commotion in the water than the mark of a minnow. It may be laid down as a rule that the best fish usually feed well on the nymph and spent gnat, and badly on the subimago. The reason probably is that when they are well on the nymph and take, or try to take, an occasional winged fly just out of the shuck, they are often baulked by the drake managing to fly away just at the moment they are rising; hence they avoid the subimago, and keep on feeding on the nymph. After a time they find very few nymphs, and then naturally come on to the imago, which, lying flat on the water with its wings extended, is unable to fly, and falls an easy prey to the trout.

Although, as a rule, the spent gnat is more plentiful on the water in the evening, and even sometimes after dark, yet occasionally trout during the day will prefer the imitation of it to that of the Green Drake. A week or more after the fly is over, trout taking duns will often be tempted by a spent gnat: it seems as if the memory of the flavour lingers in their minds. In wet weather great execution is sometimes wrought with the May-fly. Though heavy work to dry the fly thoroughly, it is none the less necessary to do so, and a perfectly dry cocked May-fly on a rainy day is almost certain death to a rising trout. It is, of course, more difficult to cast against the wind with a May-fly than with a small dun, but with a short length of gut and the use of the horizontal cast or downward cut it can be done.

A half-hour before the hatch of the drake, the Alder or Welshman's Button are often taken, and at times these or the Kimbridge sedge are taken in preference to the May-fly itself, even during the thickest of the rise. Sometimes, with a good show of the Ephemera on the water, none of the many patterns known will rise the trout. In such a case try Flight's Fancy dressed on a oo hook, or, if this should prove unsuccessful, the Wickham or Pink Wickham on hooks o or 1. If this will not tempt them, as a last resource try a sedge dressed large on hook No. 2 or 3. Perhaps the best pattern of sedge is that known as the Kimbridge, dressed thus :—

Wings: Woodcock.

Body: Pale condor, nearly but not quite white.

Hackle: Pale ginger cock, carried down the body from shoulder to tail. It should be fully hackled, and if one hackle is insufficient, two should be used.

If, after all, you cannot rise the fish; if all changes of fly are useless; if you cannot throw accurately against the wind; if the trout keep coming short, and you either do not touch them or at best only hook them lightly and they get away; if the hooked fish weed you and break; if hook after hook snaps off at the barb; if you get cast after cast broken, or perhaps finish up by smashing your favourite rod short off at the butt ferrule, one parting word of advice. Do not swear at the river or the fish in it; do not abuse the hook-maker or fly-dresser; do not rave at the rotten gut, or heap blasphemy on the head of the unfortunate man who made your rod. All this is childish, useless, and unsportsmanlike. Probably your non-success is due in most respects to your own shortcomings. You cannot rise your fish with any pattern of fly in your book, because, in all probability, he has seen you or your rod waving over the water, and is fully alive to the fact that he is being fished for. You cannot get your fly out against the wind, because you hurry your rod and use undue force, or because you will not finish the cast with rod-point close down to the water. You fail to hook your fish, because you strike too soon or too late. The fish weed you, because you lose your presence of mind when they are first hooked, instead of resolutely dragging them at once down stream over the top of the weeds, or giving them plenty of slack line, according to circumstances. Your casts and hooks are broken, because either you do not test them, or else you put undue strain on them.

As to the fracture of that pet rod, it may be due to a thousand-and-one causes besides the roguery of the rod-maker. Perhaps you hurry it too much. Perhaps every time you get a small piece of grass or weed on your hook you lash a long line backwards and forwards, with great violence to try and

force it off. Perhaps, when you get hung up in a weed or sedge you try to pull it off with a furious jerk of the rod, instead of taking the line quietly in your hand and drawing it gently away. Possibly, too, in such a position as one of the foregoing dilemmas you cracked the joint almost through yesterday or the day before, and the least strain to-day is sufficient to complete the fracture. In fact, I would preach one text only: Keep your temper and be patient if you would succeed, not only in May-fly fishing, but in any other fishing, any other sport, or, in fact, in any walk of life or occupation you may pursue.

FREDERIC M. HALFORD.

SPINNING AND BAIT FISHING FOR SALMON AND TROUT.

I TAKE up the subject of fishing for the various species of *Salmonidæ*, migratory and non-migratory, at the point where it has been left by Major Traherne, Mr. H. R. Francis, Mr. H. S. Hall, and Mr. F. M. Halford—namely, where fly fishing ends and bait fishing begins. In the term 'bait fishing' I include everything except fishing with the artificial fly, and embrace spinning as well as shrimp and worm fishing.

For convenience of reference I shall divide these subjects into their 'specific' variations as follows :

Spinning for salmon.

Worm fishing for salmon and bull trout.

The prawn or 'shrimp bait' for salmon.

Spinning for lake trout.

Stream minnow spinning for brown trout.

Worm fishing for brown trout.

Creeper, and stone-fly fishing, wasp-grubs, &c.

The subject of Thames trout fishing is treated of in a separate article from the pen of Mr. H. R. Francis (*vide* Volume II.), in whose references to grayling fishing (p. 318, Volume I.) will also be found some additional notes on bait fishing for grayling with the gentle and artificial grasshopper.

SPINNING FOR SALMON.

All minnow spinning for salmon, whether in lake or river, is in my experience very much a matter of locality. That is to

say, in other words, that it is only certain rivers and lakes in which the spinning bait can be used with any probability of success. For example, on the Clare-Galway river, which debouches into Loch Corrib, when there is a little freshet on in September or October the spinning eel-tail is considered the most attractive bait. On the Tweed, again, the real minnow, spun as I am about to describe, is most deadly, though, unfortunately for the spinner, not allowed, I believe, to be used. On the Aberdeenshire Dee, again, where it is permitted, the minnow is exceedingly effective, whilst on other waters, as, for example, on the Awe and Lochy, two of the most celebrated salmon rivers of Scotland, it is of no earthly use, and the minnow spinner might, for all practical purposes, as well fling his hat in. Still, as I have said, there are some rivers, and those good ones, where the spun minnow is often a deadly bait; whilst trolling for salmon with a parr—or rather (to be conformable to law) with a small trout—is regularly and successfully practised on numerous and widely distributed lakes.

As to the tackle, therefore, for these purposes, and the mode of using it, beginning with the parr or small *trout-bait*:

From $3\frac{1}{2}$ to 4 inches, measuring from the nose to the end of the tail-fin, is the most perfect length for this bait—the larger size, or something between the two, perhaps, for choice. A facsimile bait of $3\frac{1}{2}$ inches is figured in the cut, together with the tackle for spinning it. This is an enlargement, to suit the larger bait, of my original 'minnow' flight, but with a movable lip-hook substituted for a fixed one, and the gut 'lead-link' attached, as shown, by a loop long enough to admit of a reasonable variation in the size of the bait employed, whilst at the same time removing an obstacle to the proper set of the lip-hook when the gut link did not happen to be exactly of the right length. This addition was what was required to make the tackle really complete for the ordinary troller, not disposed to trouble himself with too great 'niceties,' or carrying about with him several different sizes of

flights. For all the sizes of baits properly suited to be used in Lake spinning,' both for Salmon, Brown Trout, and *Ferox*,

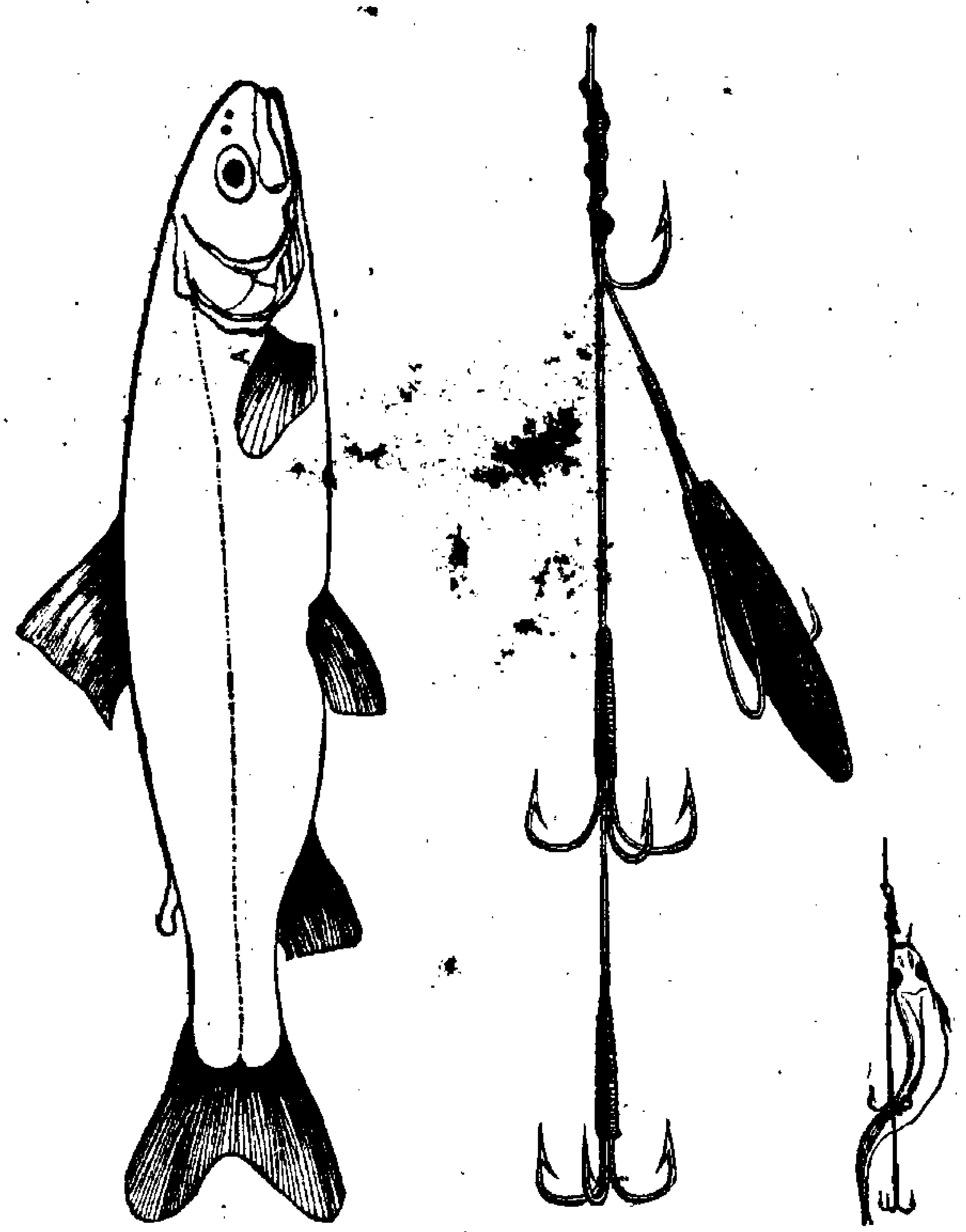


FIG I. FIG 2. FIG. 3.

LAKE TROLLING FLIGHT FOR SALMON AND TROUT.

Directions for baiting.—(1) With a baiting-needle or a disgorger push the lead (A) down the bait's throat and into its belly; (2) insert one of the hooks of upper triangle (B) through the back, about a quarter of an inch behind back-fin, leaving the tail triangle (D) to hang loose; (3) adjust the movable lip-hook (C) so as to crook the bait into the form shown in fig. 3; and, finally, pass the lip-hook through both lips of the bait, upper lip first. If the distance has been wrongly guessed—i.e. if the bait does not spin *brilliantly*—increase or diminish the curve by shifting the lip-hook, which can be readily done without taking it out by loosening the surrounding coils, pushing the gut through the loops (upwards or downwards as the case may be), and again tightening the coils.

this flight will, I venture to think, commend itself to those who may give it a practical trial.

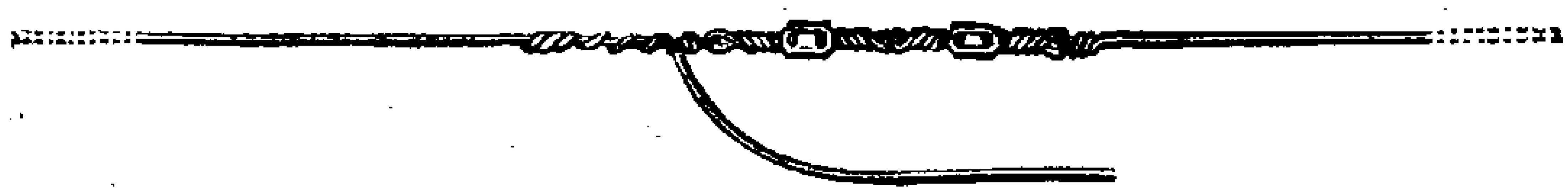
Most of the flights ordinarily used for the purpose signally fail in the first cardinal requirement of making the bait *spin*: their highest achievement is a 'wobble'; and many of them are, moreover, so arranged as to necessitate a disengagement between the flight and the trace at every change of bait. The latter drawback involves a waste of time, and the former is likely to prove fatal to sport, especially with big fish, as a heavy salmon or trout will rarely follow a bait that is moving very fast away from him, nor, on the other hand, will he freely take one that is not spinning or rotating rapidly enough to conceal the hooks: ergo, with a 'wobbly,' or badly-spinning, bait, the choice lies between obtaining a spin by rowing too fast, or by rowing at the right pace to sacrifice the spin altogether.

The flight I recommend gives, when properly adjusted, a really brilliant spin—not 'wobble'—a spin so good that is, that it will serve its purpose when the boat is moving slow enough for the taste of the biggest and laziest of *Salmonidæ*. There are, it will be seen, only two triangles and one lip-hook altogether, and they are in the right place—i.e. nearer the tail than the head; the adjustment to the bait is easy and expeditious; and no time is lost in detaching the flight from the trace (as in the 'Dee' and other minnow flights) when changing baits. But beyond these advantages, and equal, perhaps, in importance, is the transfer of the lead from the trace, where it is most conspicuous, to the belly of the bait, where it is invisible, and where, moreover, it both puts the weight exactly where it will do its maximum of work, and, at the same time, assists materially in producing the 'spin.' The same flight can, of course, be used *minus* the lead, but the spin is somewhat less brilliant, and apt on occasions to become irregular. Moreover, it is a rare and altogether exceptional circumstance to meet with water deep enough for trolling at all, which is too shoal to admit of this small lead

being used, not only without any practical inconvenience, but with *distinct advantage.*

The lead should be attached by a link of stout gut—of the same thickness, in fact, as the rest of the flight—and lappéd on to the lip-hook, *inside.*

The trace I use with this (or any other) flight for lake trolling, consists of 8 or 9 feet of picked gut, say, an ordinary 3-yard casting line—salmon or trout gut, according to the size of the fish expected—with two sets of *the smallest sized* 'double swivels,' knotted (not lapped)[1] into the gut at equal intervals, and a lead-wire 'swivel-compeller' close above the upper set, to prevent risk of the line 'kinking.'



LEAD-WIRE SWIVEL-COMPELLER.

The lead-wire for the present purpose should be a size or two thicker than that shown in the cut. To twist it on, lay a pin along the gut at the desired point, and twist the lead-wire round both pin and trace; then draw out the pin, and with the finger and thumb tighten up the coils of the wire until they hold firmly to the gut. The swivel-compeller is very inconspicuous, and thoroughly efficient. If still more lead is required to sink the bait, it can be most conveniently added by running a pipe-shaped lead on to the reel-line, just above its junction with the trace, and therefore well away from the bait, or by twisting some more heavy lead-wire round the trace on the next link above the swivel-compeller. In the former case a knot should be tied in the reel-line over the lead to prevent its slipping up the line. For merely temporary purposes I

[1] Lapping is a disfiguring un-necessity. The simplest, neatest, and strongest junction between the gut and the swivels is to pass the gut, *thoroughly well soaked, of course,* through the swivel-loop, and then, with the end, make a double slip knot round the main trace (see second fig., p. 12), and draw it tight.

always carry in my trolling-case a few common 'plummets' of rolled sheet lead, of different weights, which can be attached and detached in a few seconds without disengaging the trace from the line. This is not so neat as a proper lead, but it answers the purpose sufficiently well at a pinch.

After thorough practical experiment, I can recommend the foregoing flight, trace, and system of leads and swivels, as comprising the maximum of fineness, simplicity, and efficacy, and I feel convinced that those who try it fairly, and exactly as here described, will never use any other.

For the convenience of any of my readers desirous of trying the tackle, Messrs. Farlow have the complete patterns.

Dressed on larger hooks—and either with or without the second or tail-triangle—and with correspondingly longer lead, the same flight will be found a capital one for pike-spinning where small baits are used, the hooks in this case being tied on six or seven inches of fine clouded gimp, or twisted gut. A gudgeon is the pike-bait which the flight spins best, and that of a medium size, say 4½ inches. With longer leads, &c., it will, however, spin a full-sized gudgeon up to 5½ inches (nose to tip of tail-fin).

Of artificial spinning baits for salmon, Brown's Phantom Minnows still appear to command the greatest number of suffrages; and Major Traherne lately told me that on occasions he had found a good-sized spoon—rigged with end triangle only—a killing bait both in still and running water. My own experience of artificial spinning baits for salmon is not large, and as far as it goes is all in favour of the natural rather than the artificial.

In all lake spinning both for salmon and trout, a very long line out behind the boat, say from 40 to 50 yards, and where depth admits or indicates it, even 60 or 70 yards, is very advisable. Consequently it is best, with a view to a 'reserve,' to have from 120 to 140 yards of line on the reel. Half of this should be of dressed silk, not very stout, and by using plenty

of fine back line for the other half the whole can easily be got into a 4-inch or 4½-inch reel, according to width of 'barrel.' Malloch's 'Sun and Planet,' figured at p. 61, is one of the most convenient reels I know of for boat lake-trolling, and for rod that described in worm-fishing for salmon will be found about perfection . . . but any stout salmon-rod will answer the purpose sufficiently well when no regular trolling rod is at hand.

In River spinning for Salmon, as distinguished from lake spinning, the real minnow—*leuciscus phoxinus*—is, as already observed, in certain localities a very killing bait.

FIG. 1.

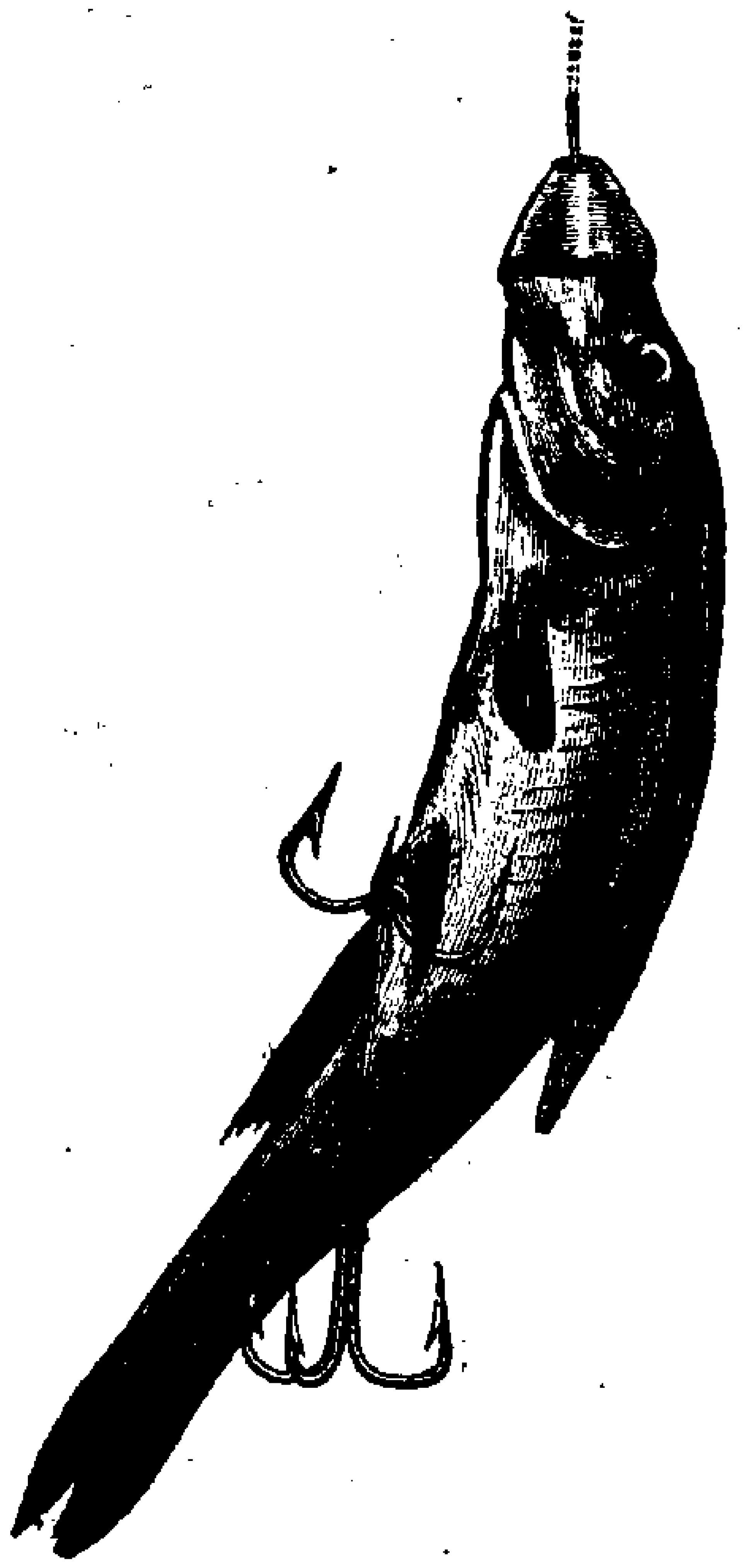


FIG. 2.

THE 'DEE' MINNOW TACKLE.
For river salmon spinning.

The engravings represent what is probably the best tackle for this purpose. I have called it the 'Dee' tackle, from the

name of the Aberdeenshire Dee, where it is well-known and much used.

Fig. 1 is the flight with a leaden sinker run on to the trace, but in baiting this has, of course, in the first instance to be slipped off altogether—one of the few drawbacks to an otherwise excellent tackle. Fig. 2 is the flight baited. Thus:

> Having attached a baiting needle to the loop of the strand of salmon gut on which the flight is tied, pass the needle carefully in at the vent of the bait and out at its mouth. The baiting needle is now taken off, the leaden cap slipped over the gut and pushed into the bait's throat until it occupies the position shown in fig. 2. The whole bait and lead are then pressed down on to the triangle, sufficiently to curve the bait by bending its back, in the manner represented in the diagram. The 'nicks' or slices on the lead are made with a penknife for the purposes of keeping the lead in its place in the bait's throat and belly, but some spinners prefer it smooth, and others with a 'pin-hook.'

The trace consists of two or three yards of picked salmon gut, with, say, two 'sets' of very small double swivels at intervals, and attached to a light dressed silk running line, such as would be used in fine spinning for pike; the rod as described for worm-fishing for salmon. A fine lead-wire swivel-compeller may be added above the top set of swivels to insure against kinking.

This tackle besides being excellent for spinning for salmon with the minnow, as already described, is also one of the best I know for spinning that most deadly bait in Irish waters, the stone loach or colley, as it is locally termed. The loach, however, to spin well must not exceed three and a half inches in length as a *maximum*. Some further remarks as to the proportions to be observed between the length of the bait and that of the lead will be found farther on under the heading of 'Lake Spinning for Trout.'

The best times of year for using the river spinning bait are the spring and late autumn months. For some reason hot weather appears to be destructive of its killing properties, and

as a rule it is of very little use, or of none at all, during summer.

The minnow may be used successfully in almost any state of water which is not too thick and not too rapid. A moderately full water is, however, the best; what would be considered good water, in short, for the fly—i.e. porter coloured. The rapidity of the current in the stream or pool should be such as to be sufficient to spin the minnow without, as it were, *tearing at it.*

The importance of this point will be understood when it is explained that it is upon the current of the stream itself that the minnow spinner practically depends entirely for the 'working' of the bait. He throws the bait down and across, and lets it *swing* with the current. He does not draw it in with his hand until the moment of taking it out of the water, for the simple reason that it is found salmon will not run at a bait when it is being drawn in. In order, however, to increase its lifelike appearance, the spinner should continue, as the bait moves with the current, drawing the line in a little and then letting it go back—making a sort of see-saw, that is—with his left hand, although not actually shortening the line. Some spinners make this movement with the point of their rod.

It will be seen from the engraving that the minnows to be used should be large ones, and the fresher the better; in fact, I should advise their being carried in a small bait can by the side of the river—Field's aerating bait can being very much the best for the purpose. Of course, if there is a sufficient supply they may be killed before starting and kept fresh for the day's work in a pocket-handkerchief frequently wetted, but they are apt, after a certain number of hours in this condition of dampitude, to get flabby, and certainly lose a part of their brightness and silveryness. A little oatmeal, put every morning into the bait can or tank in which the minnows are kept, will help to make them plump and in good condition.

For this sort of minnow spinning the artificial minnow

appears to be practically useless; at any rate, the natural bait will kill ten or even twenty to one so taken.

The extremely local character of the minnow as a spinning bait has, however, been already alluded to at the beginning of the article.

WORM FISHING FOR SALMON AND BULL TROUT.

There are many rivers in which the bull trout absolutely refuses to rise to the fly, and some in which salmon are so rarely to be tempted as to amount almost to the same thing so far as the angler is concerned. There are also frequently states of water—sometimes when it is too low and bright, constantly where it is too thick—in which fly fishing is so hopeless that some other mode of fishing must be had recourse to or the riverside abandoned.

Under such circumstances the worm is a perfectly legitimate bait, and used as I am about to explain must be admitted to afford quite as much sport, so far as the playing and landing of the fish is concerned, as fly fishing itself.

In saying that the worm may sometimes be used with success in water that is very low and bright, I refer entirely to this method of fishing, with which as I have myself repeatedly had good sport under such circumstances, I am confident that both salmon and bull trout may, at any rate in some rivers, be taken when the water is at its lowest and the sun at its highest and brightest. I will not say that this is always the case, but I have known it not infrequently to be so, and where fly fishing is out of question there cannot be any harm in at least trying the worm. The best water for worm fishing is whilst it is rising just before a flood, or clearing and settling down after it.

Many fishermen assert that fish will not take on a rising water, but in the case of worm fishing for salmon and bull trout I have repeatedly proved the opposite of this to be the case. Indeed, I hardly know which state of the water is the more favourable. Perhaps the first symptom of a freshet, bringing

down with it, as, of course, it does, a certain amount of bottom food, puts the fish at once on the alert and on the look-out for 'ground bait.' There is a pool on the upper Usk, locally called the Bason Pool, with a stone in the middle which acts as a sort of water-gauge, and when this stone was nearly, but not quite, covered, worm fishing in the pool was at its perfection, no matter whether the level were reached by the rising or falling process. When once the water was over the stone it would be a saving of patience and tackle to sit down on the bank and smoke, for the chance of killing a fish was almost *nil.*

Everyone knows, of course, that the rule of a certain level of water being requisite holds good with regard to fishing with the fly in almost every pool. I well remember that my friend, Mr. John Blackwall, junior, quite the most successful salmon fisher on the Conway, used to have such a water-gauge on the side of the river opposite his drawing-room window, some quarter of a mile off, but which he could yet command by the aid of a strong telescope or a pair of field-glasses, and he never used to think of sallying forth until the water had reached the exact mark.

This is all very well, however, for salmon fishers residing constantly within sight of their river, to whom time is of no particular object, and every month of the season open. For my own part, it takes a very bad state of water indeed to keep me from the riverside, and I must say that I can recall not one, but many occasions, when I have put my rod together amongst the scarcely suppressed jeers of my friends, and in the teeth of local *quidnuncs*, with the result of killing a salmon after all. I recollect once, in particular, on the Bush, in the long pool below Bush mills, when the water was almost chocolate colour, and very nearly opaque, so that even my friend, Dr. Peard, one of the most expert and indefatigable of salmon fishers, as well as the most charming of companions, thought it hopeless to cast a fly—and he knew the Bush from the sea to the Leap, every stone and turn of it. And yet I had not been fishing ten minutes with one of Willie Haughie's

silver-bodied 'Bush-rangers,' as we used to call them, before I was fast in a good fish.

This, as regards salmon fishing with the fly, is, however, the exception, and not by any means the rule. With the worm the chances of coloured and uncoloured waters tell much less heavily against the rod. On the Bush and on the Usk also I have killed salmon with the worm when the water was slightly removed from the consistency of pea-soup. Once on the Bush, with the river in this state, and when all legitimate efforts had failed of success, I recollect killing a salmon with—well, *without* the worm—in the well-known pool bearing the odd-sounding appellation of 'Jeannie's dam.' At this spot, where a broad sweeping flood showed the river to be anything but dammed, I sat down to watch the spate and smoke a consoling cigar, when I noticed a large fish repeatedly rising in the exact same spot, some fifteen or twenty yards from the bank—rising, indeed, with such persistency as to suggest an idea that I hastened to put into practice, but on account of which, I need hardly say, I have ever since suffered the pangs of remorse! Judging the distance of the rising fish as well as I could, I kept steadily casting over him. Presently, as I had anticipated, the fish and my fly arrived at the same point on the surface at the same moment, when, as Artemus Ward would have said, 'by a dexterous movement of the body he managed to bring his off pectoral fin into vigorous contact with the barb of my fly-hook.' The contest was sharp, but not short. My friend, a fish with the tide lice still on him, and who eventually turned the scale at 15 lbs., showing the most furious indignation at the ungentlemanly treatment he had received,—rushing hither and thither, up and down stream, back and across, over and under, in a way that was a 'caution.' He gave me one of the warmest twenty minutes' work that I ever remember.

But this is a digression—or rather a confession, which I make, perhaps, with a view to 'absolution.'

So shall my soul of conscience-prick have ease. . . .

To return to worm fishing.

The 'Leap' on the Bush—a high fall into a rocky chasm, which ends both my angling experience and local topographical knowledge—is considered the best place on the river for the worm, doubtless because the fish work their way up to this point with the rising water, and there find themselves barred in the 'pool,' where if you fish sufficiently long and persistently you are pretty sure to be able sooner or later to show them the worm, or, perhaps, more correctly speaking, to bring it into juxtaposition with their noses.

The method of using the worm on the Bush, which is also that most commonly practised everywhere, is of a very primitive nature. A single large hook, say grilse size, is whipped on to two or three yards of salmon gut, and passed through the middle inch or so of three or four lob, and some smaller worms (according to the 'size' of the water and size of worms), which are run up the line one by one as they are threaded on, the last small worm being adjusted to cover the point of the hook. The worms are now slipped down the gut again, the lowest ones over the hook shank. A large shot, or small bullet, according to circumstances, is then attached to the line about $1\frac{3}{4}$ feet above the hook. The shot or weight should be sufficient to carry the line well to the bottom, but yet should not be so heavy as to prevent the stream 'dribbling' the bait along with it over the stones and gravel. The method of working this sort of worm bait is exceedingly simple. The fisherman, having chosen a pool where he is certain that there will be a good collection of salmon, goes on fishing it steadily out, throwing the bait up stream and letting it be brought down to him and carried past him by the current. The length of line to be used must, of course, depend entirely upon the size of the pool.

The first symptom of a bite is the bait ceasing to travel, followed commonly by a very gentle sort of twitching. Sometimes, however, as I have pointed out in the 'Modern Practical Angler,' although, in my experience, not very often, 'the salmon takes the bait in a more reckless fashion, resembling

rather the run of a trout. Having taken it, he will frequently remain nearly or quite motionless for some little time, and then move quietly away.' This is the moment to strike, with a quick, tightening pull, and as the bait is almost always actually swallowed or pouched, there is little fear of the fish being missed. Should he move away at once after biting, line must be given him and time allowed to pouch the bait.

To provide against sudden moves or rushes on the part of the fish, and unintentional checks on that of the fisherman, it is a wise precaution always to keep a yard or two of spare line loose 'in hand.' A jack rod and a spinning line, or a salmon rod with a short stiff top, will answer every purpose for this sort of worm tackle. It is, however, at best a clumsy and rather uninviting mode of fishing, both from the number of worms with which it is necessary to bait, and also from the fact of the hook being in most cases 'gorged' before the fish is struck. This deprives the whole business, in my opinion, of much of its interest as a sport, as when a fish cannot by any reasonable probability escape, the skill and excitement of landing him are reduced to a minimum.

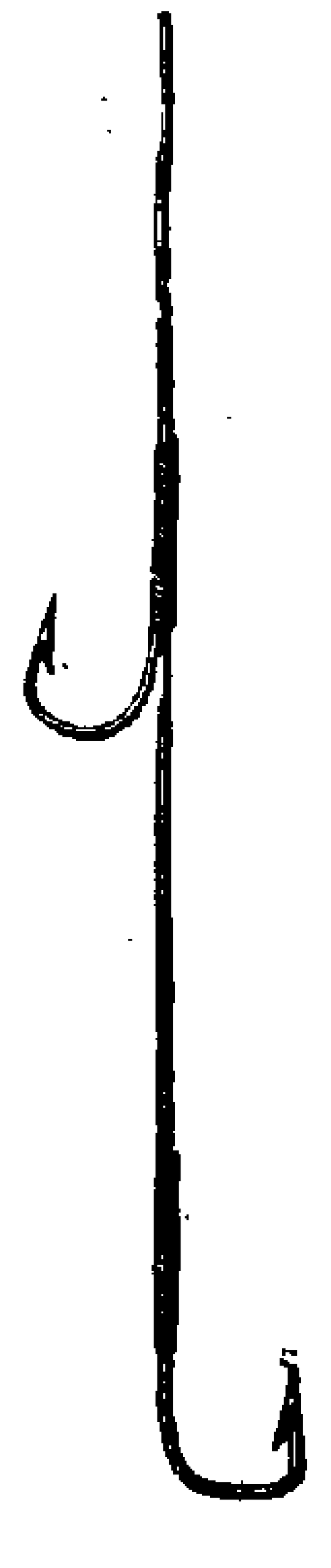
There is, however, another method of worm fishing with which I have had splendid sport, both with salmon and bull trout, when fly fishing was, from one or other of the reasons already stated, utterly hopeless. And I may here remark, parenthetically, that such are the conditions to which I should be disposed myself to limit the use of the worm as a bait for these fish, or, at any rate, for the former.

This method, which, until I adopted it, and published the successful results of my fishing with it, was unpractised, so far as I am aware, and at any rate 'unpreached' by masters of the craft, is, in my judgment, as superior to the system above described, both in its practice and results, as spinning is in advance of gorge baiting. The principle of this mode of fishing is, in fact, almost identical with that employed in ordinary brown-trout fishing with my two-hook worm tackle, the difference being the size of the hooks and the substitution

of a single lob-worm—large or small, according to the state of the water—for a single brandling; in other words, the difference is merely one of size and proportion. The hooks, which it is very important should be stout in the wire—I may say, extra stout in the wire—should be two or three sizes larger than those in the trout tackle. No. 6 of my old pattern (Hutchinson) is the best hook when the water is low and clear, and with thicker water and an extra large lob-worm, No. 7.

I strongly recommend for the particular branch of fishing under consideration this bend of hook. In the river where my method of worm fishing, as above described, was first practised, almost every other pattern of hook has been tried, but with markedly inferior results; in fact, very few hooks of the size indicated are strong enough to hold a heavy fish, and I should therefore advise anyone intending to give the system a trial to take care that he gets the hooks of the bend and by the makers I have named, otherwise they will infallibly give way.

Much finer tackle, especially in clear water, is here necessary than can be employed with the common style of worm fishing already described. In fine water I seldom use for the bottom links—2½ feet or so—stouter gut than such as is suitable, under ordinary circumstances, for white-trout fishing with the fly. The upper part of the trace should consist of a couple of yards of carefully picked and tapered salmon gut.


'PENNELL' WORM-TACKLE FOR SALMON.

A diagram of the hook part of the tackle, showing the distance between the hooks, and the size of the latter, is appended.

The next question is the sinker or lead, which should be heavy enough to carry the baited hooks *down to the bottom*, no

matter what the depth. This is a point of really critical importance. To show how important it is, I may mention that I have repeatedly fished behind local anglers who have been using the ordinary worm tackle of the Usk—that is, one or two worms leaded so as to sink a foot or two below the surface—and killed fish in pool after pool which they, with probably superior knowledge of the current-sets &c. had drawn blank.

The necessity of always 'touching ground' causes, in rocky rivers, a very considerable loss of leads, and in order to meet the contingency, and also to prevent the trace itself being broken every time the leads got hitched, I found the most convenient plan was to have a number of smoked paternoster leads of various sizes attached to horsehair loops, and to fill my pockets with these before starting. Where, however, the water is not very deep and strong, a better expedient, in various ways, is the use of lead wire, attached in the manner shown in the diagram, to the finest drawn gut, or to the weak, flattened-out, and otherwise wasted ends of gut-strands, or, finally, to horsehair. For some reason this lead wire, probably from its yielding and bendable nature, seems to catch much less often than the common bullet or than paternoster leads.

'LEAD-WIRE' SINKER.

When the latter are used, especially if new and bright, it is most important to smoke them over the flame of brown paper, or, still better, varnish them with 'Brunswick black,' before starting for the river, as otherwise the glitter of the lead will too often effectually scare away the fish. The lead, of whatever sort it be, should be attached to the trace about a foot and a half, or a little more, above the hooks—above the second knot in the gut, in fact—and there should be an inch between the lead and trace. The object, of course, of attaching the leads by fine or defective gut, or horsehair, is that when a foul occurs, which it very frequently

does, the 'lead link' should break at a considerably less strain than the main line, thus preventing the latter being lost.

In baiting the tackle the lob-worm should be put on the hooks *quite straight*: the upper hook near the 'knot' in the worm—about three-quarters of an inch, that is, below the head; and the bottom hook one and a half inch lower down—the distance, in fact, between the upper and lower hooks.

The stroke, which ought not to be too hard for fear of breaking the hooks, should follow immediately on a bite, or more often on a suspicious stoppage of the bait in its passage over the bottom.

Although the stroke need be but a light one, it is very important that it should not be omitted, as it would appear from the number of fish I have hooked on the outside of the nose and mouth, and occasionally on the pectoral fin, that the salmon is frequently in the habit of pushing the bait about with his nose or smelling it without (or before) actually taking. This, of course, produces a stoppage in the line, and, in fact, all the effect, so far as sensation goes, of a bite, and a 'gentel stroak,' as Nobbes calls it, will hasten his decision in a direction favourable to the basket.

For this business a much lighter rod is required than for worm fishing with the bunch of lob-worms in the old fashion. With a heavy clumsy rod the delicacy of touch necessary in feeling the nature of the bite cannot be obtained; the rod which I use for the purpose is the same referred to in Vol. II. as a light spinning rod for jack, the butt and top being of solid wood and the middle joints of bamboo. The length of the rod should not exceed fourteen feet. It is, in fact, just such a rod as most fishermen would think perfection for paternostering or minnow spinning for ordinary lake trout (not *ferox*).

With such a weapon, however, specially made for myself to stand hard work, I have landed some hundreds of salmon and bull trout, and lost hundreds more (for with these fine hooks there are always more losses than kills), but it is still in good

working order. I say nothing of the fact that I have used it for spinning since the year ——, but 'let us not particularise!' as the player says. . . . Anno Domini is merely an abstraction, a nightmare, and time only an excrescence on eternity. Notwithstanding which highly philosophical observation, it behoves us all to remember the *carpe diem*. . . . And yet I am wandering off from my text, and diverting from their proper channel moments which should have gone to a discussion of whether worm fishing for salmon is, or is not, sportsmanlike, and, if so, where and under what circumstances?

However, I think I have sufficiently indicated my ideas on the subject in the preceding pages, and the digression will at least save me entrance into a 'thorny' dispute. I can only say that with this tackle, fished in the way I have described, I have repeatedly taken salmon in a bright sun and in the clearest and finest water, and after all other methods of fishing—fly, minnow, and the old-fashioned bunch of worms—had failed. In fact, Stoddart considers that worm fishing of all kinds is at its best under such conditions; but I cannot say that I agree with him there, a full or porter-coloured water being, in my experience, generally the best.

When water or weather is bright, it is, of course, of the utmost importance that the worm fisher should keep carefully out of sight, and as far as possible below the spot where his bait is fishing; in other words, he must always cast up stream where feasible, letting the current bring the bait down towards him, and keeping as little slack line in the water as possible. This is a *sine quâ non* in my method of worm fishing. Great nicety in the manipulation of both line and bait, as well as fine hooks and tackle, are also required to insure success, and these considerations render it, I maintain, both a truly 'sporting' and sportsmanlike method of fishing.

Here is a record of the number of salmon and bull trout taken in this way between the 29th of September and 1st of November, 1879, by Mr. Edwin Darvall and myself during thirty-two consecutive days, less six not fishing: 3, 14, 1, 7, 9, 10, 5, 14, 6, 7, 4,

15, 4, 6, 16, 10, 9, 4, 3, 5, 9, 5, 4, 11, 2, 13, 8, 17=221, with a total weight of 1,800 lbs. or an average of 69 lbs. per day. This list includes several fish weighing over 20 lbs. The six best days were 1st of October, 101 lbs.; 3rd of October, 101½ lbs.; 7th of October, 100½ lbs.; 13th of October, 146 lbs.; 28th of October, 150 lbs.; and 1st of November (the last day of the season), 170 lbs.

THE PRAWN OR 'SHRIMP BAIT' FOR SALMON.

As my experience of fishing for salmon with the prawn is somewhat restricted, I have asked Major J. P. Traherne to give my readers the benefit of his more extensive knowledge of the subject, and he has obligingly furnished me with the following notes:

'Of all baits that are used for catching salmon, the prawn, or shrimp as it is sometimes called, is the most deadly. It doubtless forms a part of his natural food during his sea life, and his preference for it to any other bait that is offered him in fresh water is therefore easily accounted for.

'It is often assumed that a salmon will not take a prawn except when the water is low and clear. This is a mistake. The assumption has probably arisen owing to the majority of anglers never dreaming of using anything but the fly as long as the water remains in order, and it is not until the fly has ceased to kill and the water is dead low and clear that they think of resorting to any other method. Salmon will take the prawn in almost any height of water as long as it remains clear.

'In the season of 1884 I was fishing the Aberdeenshire Dee. It was in the latter end of the month of February, the water bank-high and rising from the melting of the snow. In one of the pools there was a great show of fresh-run fish, and after essaying all sorts and sizes of flies and bait without success, I tried the prawn. I had very soon a brace on the bank . . . but the fish in the pool were "travellers" and soon disappeared, or otherwise I might have caught more of them; the same thing

happened on several subsequent occasions—as long as the water was clear. In the Dee it is seldom muddy except in a high flood, and it clears very quickly.

'On the Shannon, at Castle Connell, and on the Galway river they seldom use any other bait but the prawn during the spring months, because it is found to be so deadly; and when fish are what is called "sulky," and refuse the fly, I think it perfectly fair to catch them with the prawn or any other bait they will take. I do not mean to say they will always take a prawn if judiciously offered them; on the contrary, I have sometimes fished for a whole day with it without a touch; but such occasions are very rare, and except when trailing the prawn behind a boat when fishing alongside of a fly and colley on the Shannon at Killaloe I cannot recollect a fish to have ever taken any other bait in preference, always assuming that the water was clear enough to use it.

'It is quite possible that on the occasion I have mentioned the fish may have seen the fly or colley before they saw the prawn, and being in the humour they took the first of these that came across them. I am inclined to this belief, as I observed that my boatmen let out a much shorter line for the prawn than they did for the fly and colley, and consequently the last had the better chance of being first. Prawn, as well as all other bait fishing, is looked upon with great disfavour by a good many fishermen, who call it "poaching" and an unsportsmanlike proceeding. They think it useless fishing a pool with the fly on the same day that it has been fished with a prawn; and some even go as far as to say that it spoils the pool altogether for the season.

'Of course a fish that has been caught with a prawn cannot be caught over again with the fly, but barring the pool being *minus* a fish or two, which it is quite possible might have been the case had it been fished with a fly, no harm whatever will have been done. Prawn fishing neither disturbs nor scares salmon; and I know from my own experience that when the water is in order for fly fishing the chances of catching a fish

RUNNING UP AFTER A FRESH

are as good as ever for the fly two or three hours after the prawn has been over a pool. Those who say that it spoils the fishing for the fly lose sight again of the fact that salmon stay but a short time in any one part of a river, and that the fish that have been fished over in one pool by one man with the prawn, or any other bait, may, by the time the next man comes to the water, have left that pool, whilst their place has been occupied by a fresh run of fish.

'Prawn fishing is a very pleasant *dernier ressort.* One never need despair of bringing home a fish, and salmon will take it in the lowest water and on the brightest and hottest days.

'Prawns for use in the coming season should be got in during the previous autumn, when they can be bought cheaper than at any other time of the year. The fresher they are when used, the better; but if they are properly preserved they will keep their colour very fairly and take almost as well six months afterwards. They should be selected of different sizes, to be used according to the state of the water. Those with spawn in them are said to be the most killing.

'The following is one of the commonest methods for preserving prawns: Put the prawns in a saucepan of water with a handful of saltpetre, and boil them; taking them out the moment they turn colour. Then spread them on a cloth singly; and when they are *quite* dry, place them in layers in a wide-mouthed glass or earthenware jar—as many as it will hold. Fill up to the bung with glycerine; cork the bottle and fasten the cork down, if possible, with bladder covering, so as to exclude the air.

'Another, and perhaps a better way, is to preserve in salt. Fill an earthenware jar with prawns nearly to the top; heap on common salt, pouring water enough on it to dissolve it so as to fill up the interstices; continue until the jar is full, and secure with a cork as before. Prawns preserved in salt last much longer, and keep their colour better than when kept in glycerine. They are also much tougher, which is a great advantage.

'I have seen prawns in their natural state that have been

preserved in salt used with great success, and indeed it is difficult to see why it is thought necessary to boil them. The boiling process doubtless gives them a very attractive appearance, but a salmon in a predatory humour is no respecter of colour. It is the smell that is the attraction; otherwise how could fish feed on worms, and other natural food, in thick water in a heavy flood, when it is impossible for them to see an inch before them? That fish possess considerable powers of smell is well known, and is proved if only by the fact that salmon roe will attract trout to it from an almost incredible distance down stream, in flooded water. I have never heard of an instance of a salmon being caught by an artificial prawn when fished like the real bait.

'There are many different sorts of tackle used for fishing with the prawn. I have tried most of them, and as I think that nothing can beat one that was shown to me by Mr. Barter, a well-known and most successful salmon fisher in the South of Ireland, I append a drawing of it. This gentleman has made prawn, as well as every other mode of bait fishing, his especial study, and I know no better authority on such matters.

'Fig. 1 represents the tackle before the prawn is put on. The point of the needle is to be inserted in the tail and brought out at the middle of the breast, the point protruding about one-eighth of an inch; the small loop underneath the shank of the lowermost double hooks is then drawn over the point and pulled up as far as it will go, and the tail made fast to the trace by binding it with one or two turns of red cotton thread.

'If it is thought necessary, in order to prevent the action of the stream from tearing off the scales, the binding can be continued four or five turns towards the head and back again to the tail and there fastened off. If this is carefully and artistically done, a prawn should last a long time even in a rapid stream. When preserved any length of time in glycerine it will generally require binding, but if it has been kept in salt

the fastening at the tail, with perhaps one or two turns to secure the double hook under the head, will be sufficient.

'When completed and ready for use, the bait should be as represented in fig. 2.

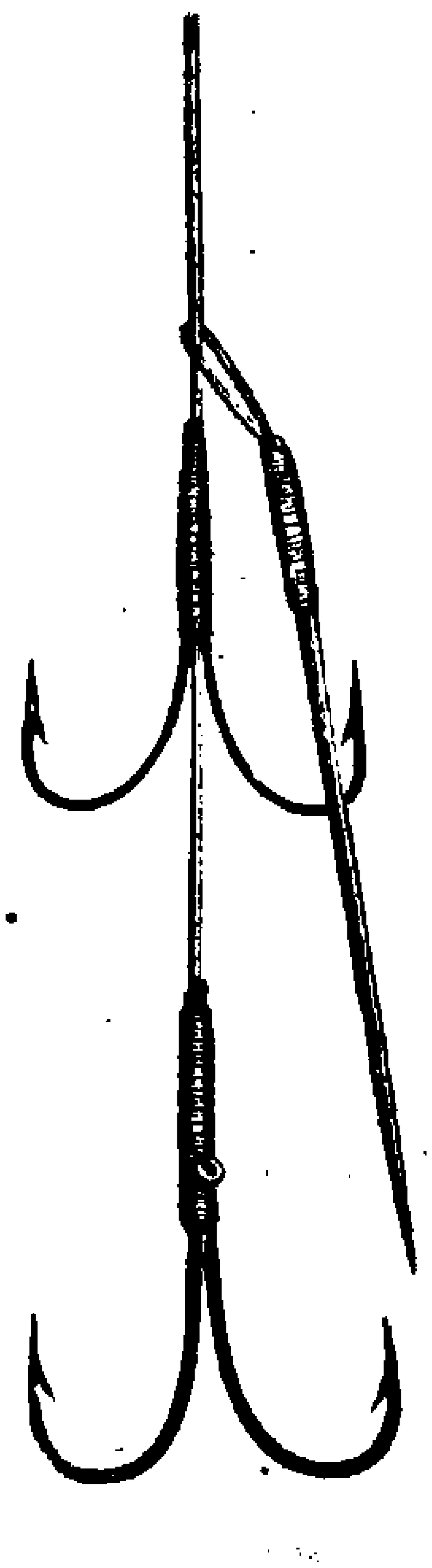


FIG. 1.—PRAWN TACKLE.

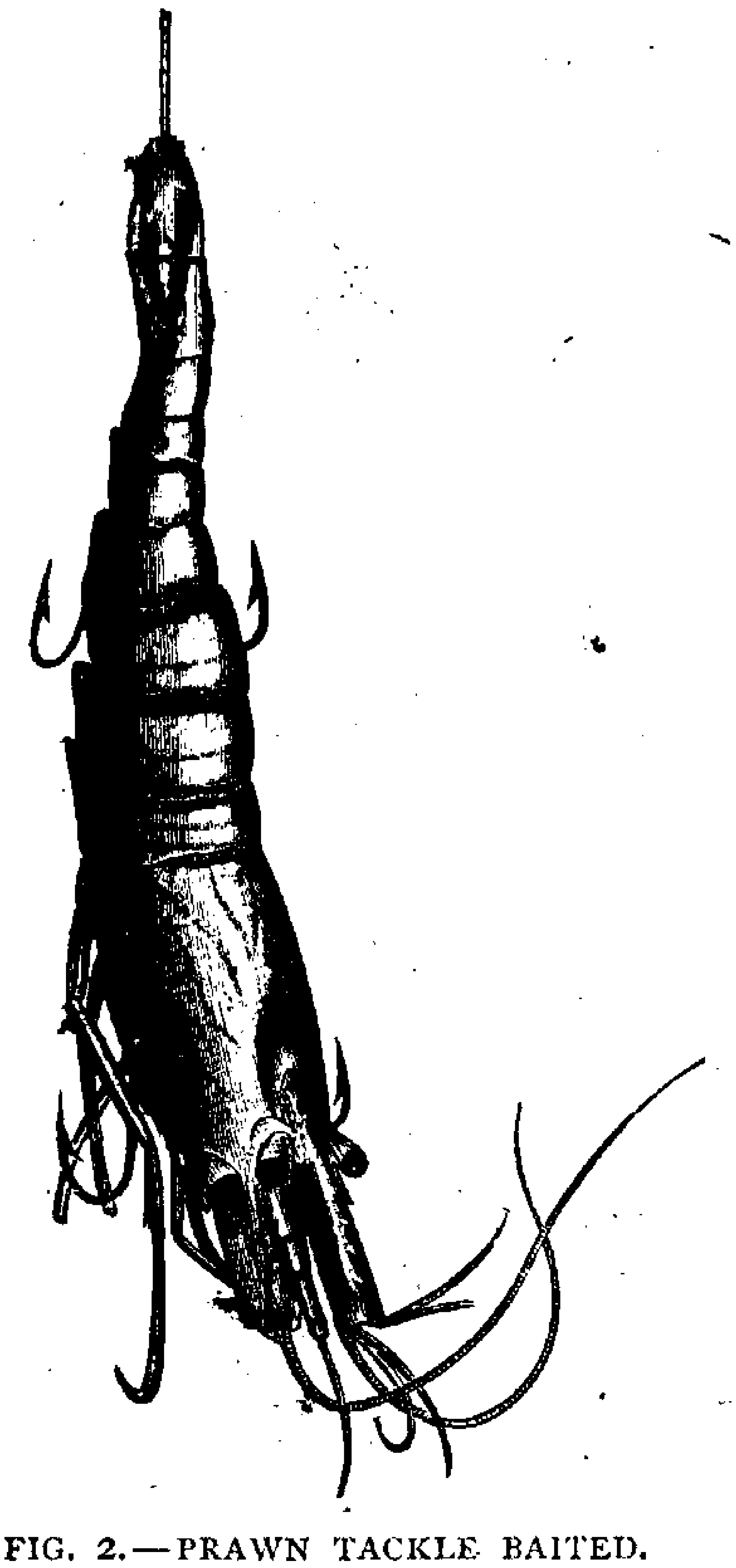


FIG. 2.—PRAWN TACKLE BAITED.

'Needles and traces with the double hooks—for which I find Mr. Pennell's pattern very suitable—at different distances apart, and of different sizes suited to different sized baits—should be dressed beforehand ready for use. In high water the largest sized prawns may be used, but in the clear water

the smaller the prawn and the finer the tackle the better the chance of success.[1]

'The most suitable rod for prawn fishing is a light cane trolling rod about 14 feet long, or a grilse rod with a short top and upright rings. I prefer the latter, as there is a certain amount of spring in it and it is pleasanter to fish with. Malloch's new patent trolling reel is admirably adapted to this style of bait fishing, as with it you can pitch your prawn out with a very slight amount of lead on the line. This cannot be done with the Nottingham reel, which requires a line to be heavily weighted.

'The line should be a *very fine dressed one*, not thicker than a fine trout line. A stouter line would be useless, as it would not pay out through the rings. The line should be constantly tested, as it soon wears out from friction, &c. The rotary motion given to the line when paid off the drum of a Malloch's reel is apt to make the line kink; to avoid this a small swivel should be attached to it about a foot above where it is fastened to the trace—an ordinary single-gut casting-line, fine or stout according to the state of the water, with a swivel in the middle, and weighted according to the rapidity and depth of the stream. The heavier the weight the farther of course the bait can be thrown. With only one shot you could not expect to cast far, but as the water must be very low when such a light weight is advisable, the distance required can generally be made up by wading.

'A certain amount of experience is required to judge the proper quantity of lead to be used, and it should be borne in mind that the prawn should not be allowed to drag the bottom as in worm fishing. The line should be weighted so that the prawn should work about midway between the surface of the stream and the bottom.

'There are several different methods of fishing with the

[1] Mr. W. Haynes, fishing-tackle maker, of 3 Patrick Street, Cork, has invented a needle with a slit in it that saves much time in putting on a prawn, and renders binding with silk unnecessary.—ED.

prawn. In big rivers, where wading is impossible, it must be done out of a boat either by casting or trailing. At Castle Connell on the Shannon they spin it; at Galway, where during the spring months nothing else is used but the prawn from 9 A.M. to 6 P.M., they let it drag with a heavy weight on the bottom as they would do when worm fishing. At Killaloe on the Shannon I have caught several fish by working the prawn "sink-and-draw" fashion, as if I were fishing with a gorge hook for pike. There was, opposite the marble works, a large pool with a very strong backwater, which always held a number of salmon, and part of the programme when fishing the pool was to use the prawn in this backwater in the sink-and-draw fashion. I seldom tried it without catching a fish. This is the only place I ever saw it tried, but I have no doubt it would be equally successful elsewhere.

'The pleasantest way, however, to work the prawn is from the bank, or when wading, on a warm day when there are plenty of fish within easy reach. It is to me the most fascinating of all bait fishing, but it does not give me the same amount of pleasure or excitement that fly fishing does. The mode of proceeding is as follows: Reel up your line to within about six feet of the top of your rod; swing (*not cast*) it out at an angle of about 45° down stream, and let the prawn come slowly round to the side you are fishing from, keeping your rod in the same position. If the stream is rapid let out a yard or two of line by degrees as the bait works round, which will prevent the action of the stream stripping off the scales of the prawn; and for the same reason wind up slowly before making a fresh cast. When the stream is very slack it will, on the contrary, be as well to gradually wind in a few yards of line to prevent the prawn catching on the bottom.[1]

[1] On the Erne and some other rivers the use of a float has of recent years been adopted for prawn-fishing, and when last on the Erne—the present season, 1889—I was assured that this plan has practically superseded all other methods. A largish float, shotted gut-line, arranged so as to swim the bait close to the bottom, and a prawn baited according to the taste of the fisher, form the tackle.—H. C.-P.

'On a fish taking the prawn, you will, if inexperienced, at first fancy yourself fast in a rock ; but you will soon learn to distinguish in a moment—by a sort of indescribable sensation —when your line tightens in a fish. When you first feel him do not strike, but give a good 'pull' or two. After two or three seconds have elapsed many fishermen strike or jerk up the point of their rod, but I am against this plan of hooking a fish for reasons I have already explained in my notes on fly fishing.'

Quitting now the subject of prawn or 'shrimp-bait fishing' for salmon, with thanks to Major Traherne for his excellent hints, and wishing him 'a light heart and a heavy creel,' we must step into the boat that has been awaiting us for the last half-hour, and putting ourselves under 'the creature Dougal's' guidance make play for the upper end of the loch—'Youth on the prow and pleasure at the helm'—so as to have at least a couple of hours before sunset to try our luck at

SPINNING FOR LAKE TROUT.

Putting aside the true salmon, *Salmo salar*, which has been already alluded to, there are three species of *Salmonidæ* taken more or less constantly with the spinning bait, namely, the common trout, *Salmo fario*, the Great Lake trout, or grey trout of the Cumberland lakes, *Salmo ferox*, and the sea trout, or salmon trout, *Salmo trutta*. This sequence represents probably the relative importance of the three fish from the point of view of the lake spinner. Indeed, as the sea trout is most commonly taken when spinning for one or other of the first-named fish, and the tackle, &c., used are the same as those applicable to spinning for brown trout, further details are needless.

The neighbourhood of broken rocky islands, and round and amongst submerged rocks, is generally good holding ground for both species, and such a place, with a depth of 6 to 10 or

SEA-TROUT FISHING

12 feet, I should select, in the absence of local guidance, for my 'trial spin' over new water. The sea-trout is also very partial to weeds.

Regular lake spinning for brown trout is seldom worth while unless they run large, say over a pound at any rate, as otherwise more sport and better will be obtained by fly-fishing. Moreover, spinning for brown trout in lakes is rarely, in my experience, very deadly, unless in waters of considerable size, and in rough windy weather. There are, however, exceptions to this rule, and I have more than once made a good basket of brown trout when the sun was at its brightest, and the surface of the lake like a mill pond, with an ordinary Devon or hexagonal brass minnow substituted for the fly at the end of the gut-cast, and an extemporised swivel arrangement, by cutting the casting line and 'knotting in' a set of fine double swivels. In this sort of trolling, or 'trailing,' where no weight beyond the brass minnow is required, I found a bit of lead-wire twisted round the gut above the swivels a very efficient preventative of kinking. (See engraving, p 383.)

In judging of the ground over which it is best to spin, the following additional hints may be of use.

There is round the shores of almost all lakes a point on the shelving bank under the water line at which light and dark seem to meet; in other words, where the rocky or gravelly bottom becomes quite invisible, owing to the depth of water. Just about this line, and rather a yard or two outside than inside of it, is usually the best for spinning. The food of both the Great Lake and brown trout consists, to a great extent, of small fry. These usually, in nautical phraseology, more or less 'hug the shore,' up which, therefore, stopping short at the shallows, the trout naturally comes in pursuit of them. This question of locality is, as I pointed out in the 'Modern Practical Angler,' rather an important one, as thereupon it depends mainly whether the bait is ever in a position to be seen by the fish it is intended to catch. The observation has special reference also to the Great Lake trout, in regard to which I have

offered the following observations in the passage already referred to.

The secret of success in spinning for the Great Lake trout lies principally in four points—time, depth, speed, and place, thus:

Time.—As a rule, *begin* fishing when other people are *leaving off*; that is, in summer at about six o'clock P.M. From this hour until midnight lake trout may be caught.

Depth.—Instead of weighting the tackle to spin the bait at some three feet from the *surface*, lead it so as to sink to within about the same distance from the *bottom*, be the depth what it may. Both for this purpose, and in order to keep the bait at a distance from the boat, it is almost indispensable that from forty to fifty, or, in very deep water, as much as sixty and even sometimes seventy yards of line, should be let out from the reel.

Speed.—Let the boat be rowed *slowly*, rather than at a brisk, lively pace. A large lake trout will seldom trouble himself to follow a bait that is moving fast away from him; consequently the bait must possess the speciality of spinning, at all events moderately well, or it will not spin at all.

With regard to the ordinary brown lake trout (*fario*), though they may not unfrequently be taken at night when trolling for *ferox*, they are rather day than night feeders, and usually take best before noon.

As regards the tackle for lake trout spinning, that described and recommended for lake salmon trolling, p. 381, is by far the best I know of, and the flight and bait there figured will be found a good general medium, both for heavy brown trout and *ferox*. Unless where no small brown trout were obtainable, I should never think myself of spinning with a bait longer than 4 inches from nose to tip of tail-fin. If the actual minnow or a stone loach (Irish 'colley') be used, either the 'Dee' flight, represented at p. 385, or my own flight of the reduced size shown in the cut, or a size larger, can be advan-

tageously employed. [For 'Baiting' instructions and general observations on this flight, see p. 381.] The loach makes one of the very best lake trolling baits, but except in the smallest sizes—little above minnow-size, in fact—the 'Dee' flight will

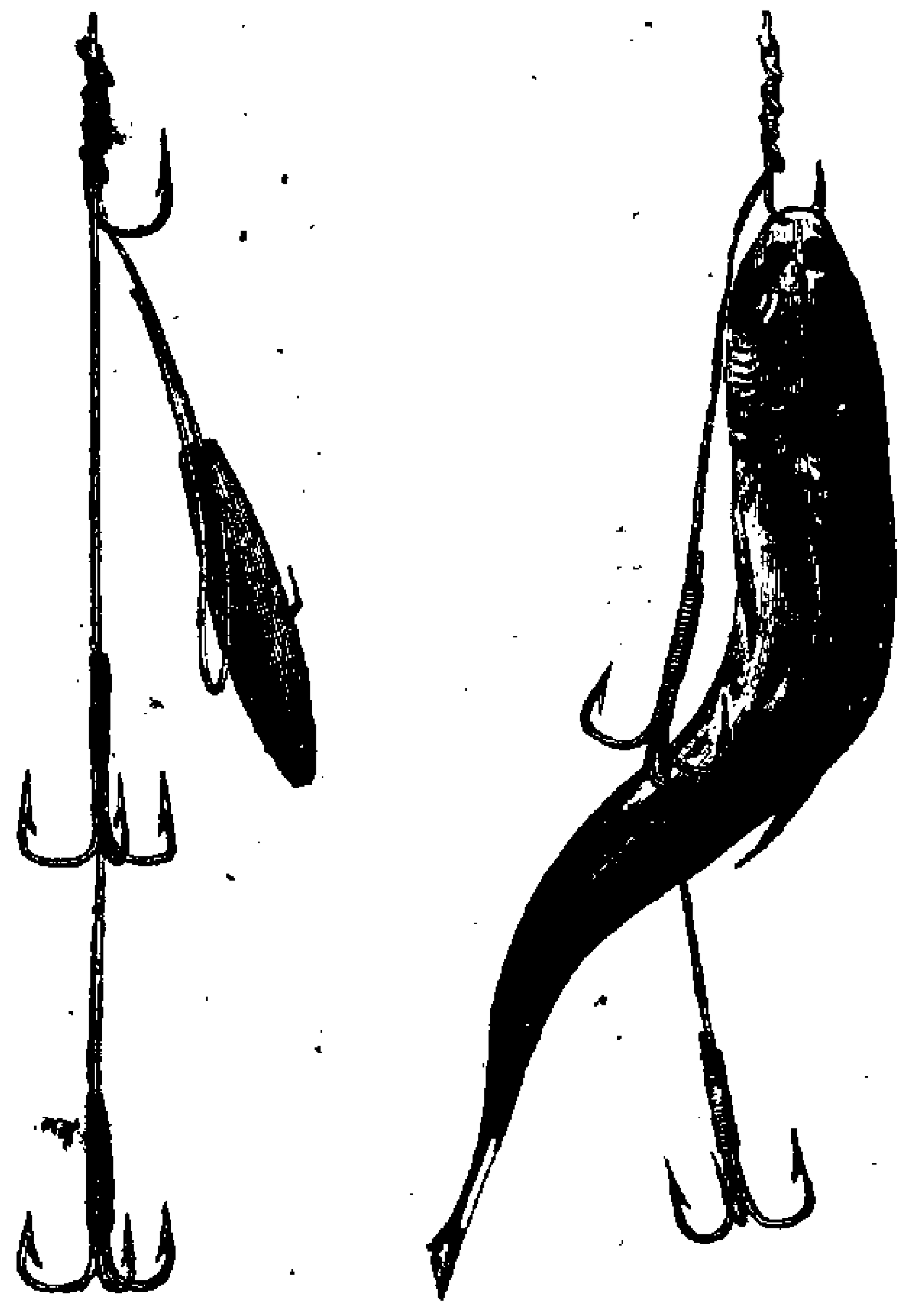


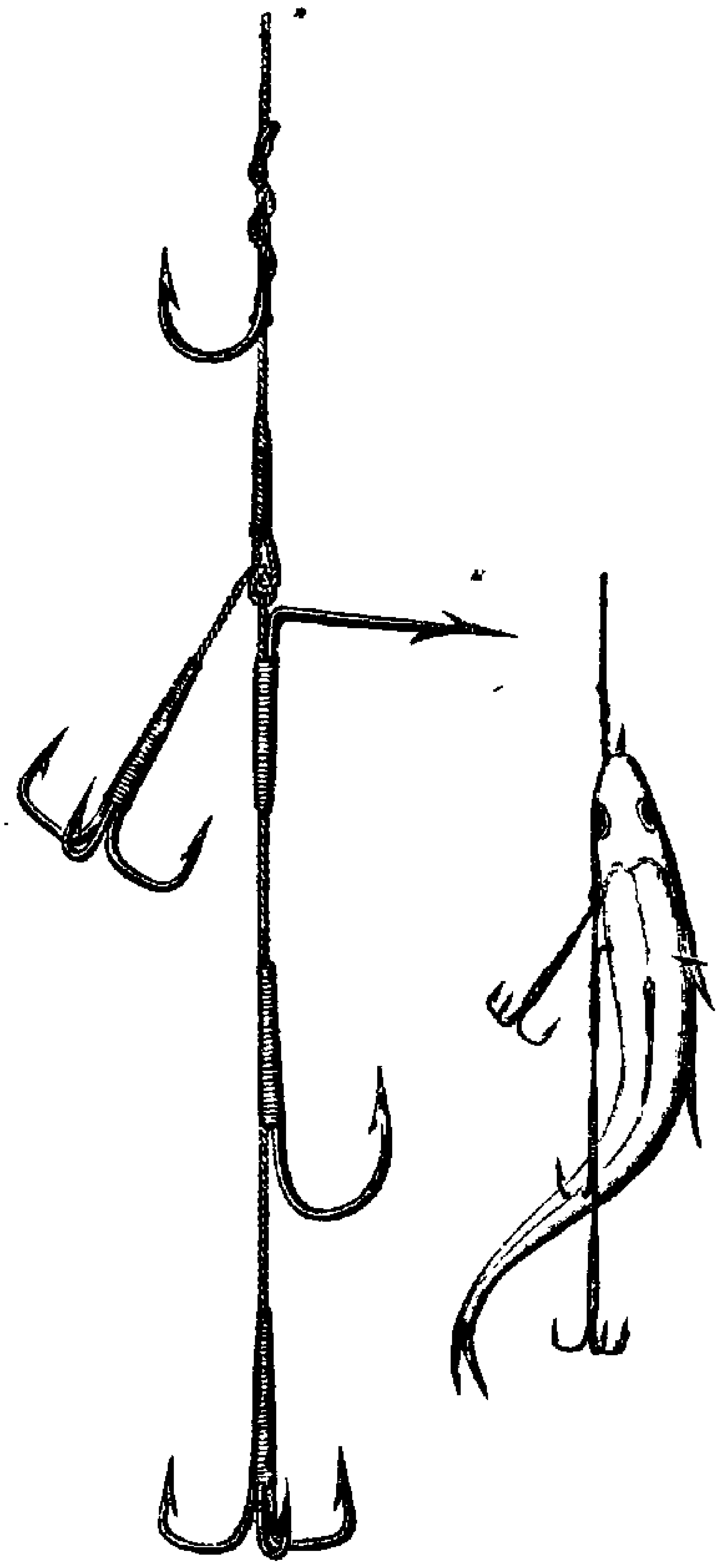
FIG. 1. FIG. 2.

'PENNELL' MINNOW-SPINNING FLIGHT.

not spin it, or any other bait, properly, but produces an eccentric sort of 'wobble' rather than a spin. My own flight is applicable to all sizes, and gives a much more brilliant spin. The 'slenderer' the loach the better it 'spins.'[1]

[1] The loach, as I have observed, is one of the very best spinning baits for all sorts of lake trolling. The way to catch him is to walk up the middle of a shallow pool or stream where he abides, carrying in your hand a three-pronged dinner-fork. Armed with this you turn over with your left hand any flat tempting-looking stones under which the loach, or 'beardie,' as he is sometimes called, usually has his *habitat*; his nose or tail will very likely be seen

In choosing leads for baiting with the loach the thinnest should have the preference, as the little fish has not a very capacious 'gape,' and if the leads are too thick they are apt to split the jaws. The length of the lead will also vary slightly as the bait is longer or shorter; with the 'Dee' flight one inch, 'cap' included, would be about correct for a loach of 3 inches. For a long slender bait of $3\frac{1}{2}$ inches, a slightly longer lead—say $1\frac{1}{8}$ in.—is desirable. Small baits are preferable to large ones in lake trout spinning; indeed, I think the bait can hardly be too small if it spins really well, and, as observed, a 4-inch trout should be the maximum size. When from necessity or other cause baits over 5 inches are used, a small-sized 'Pennell-Bromley' flight, described in Vol. II. for Pike-spinning, can be adopted, and from the arrangement and position of the hooks on the bait will be found well adapted to spinning for *Salmonidæ*.



'PENNELL-BROMLEY FLIGHT.'

The mode of constructing the trace for this latter tackle is

projecting. It then becomes a comparatively easy matter with a quick eye and a steady stroke to transfix him with the trident and transfer him to the bait basket. The loach has the very ostrich-like habit of conceiving its body to be hidden whenever its head is, and thus facilitates materially the operations for its capture.

similar to that already described, but substituting for the swivel-compeller a fixed underhung lead—pipe-shaped perhaps best—five or six feet above the bait. The weight of the lead must of course vary according to circumstances. One of the best, at any rate so far as shape is concerned, is that shown in the cut, with a set of double swivels attached, but the latter are figured unnecessarily large.

LEAD AND SWIVELS COMBINED. (Farlow.)

In all lake spinning the best plan, nineteen times out of twenty, is to trail the bait behind the boat, and the farther off, within reason, the better. On getting a 'run' the fish ought to be at once sharply struck, and the boat almost stopped.

In artificial baits of all sorts I personally have not a very robust belief. As, however, natural baits cannot always be obtained, and as other fishermen's experiences perhaps differ from mine, I may mention one or two of the artificial baits which seem to possess special recommendations.

First, there is the time-honoured 'phantom minnow,' both blue and brown, which has many admirers, and after that follows an army of less known nondescripts of all kinds, 'Archimedians,' 'water witches,' 'mermaids,' 'Halcyon spinners,' 'Premier spinners,' 'Excelsior spinners,' 'Cleopatra baits,' 'quill minnows,' 'Archimedian minnows,' and spoon baits, plain, fluted, twisted, and of every conceivable variety and pattern. Each or all of these may or may not be good; unfortunately the life of any one fisherman is too short to give even a fraction of them a fair trial, and in selecting his artificial baits, every spinner will, perhaps, be wise to follow his own particular fancies.

STREAM MINNOW-SPINNING FOR BROWN TROUT.

This is the only sort of fishing that I am aware of in which an artificial bait may really be used with satisfaction and success, and it is probable that as a matter of fact, many more trout are actually killed in the streams with the brass minnow, or some other artificial imitation of the real fish, than with the minnow itself. But despite the dictum of Mr. Hewitt Wheatley, whose 'nymphs' and 'water witches' were, I must say, most graceful, and beautifully drawn, I am disposed to think that this artificial inequilibrium results rather from the additional trouble involved in obtaining and baiting the natural minnow

'PENNELL' STREAM MINNOW FLIGHT.

'DEE' MINNOW FLIGHT.

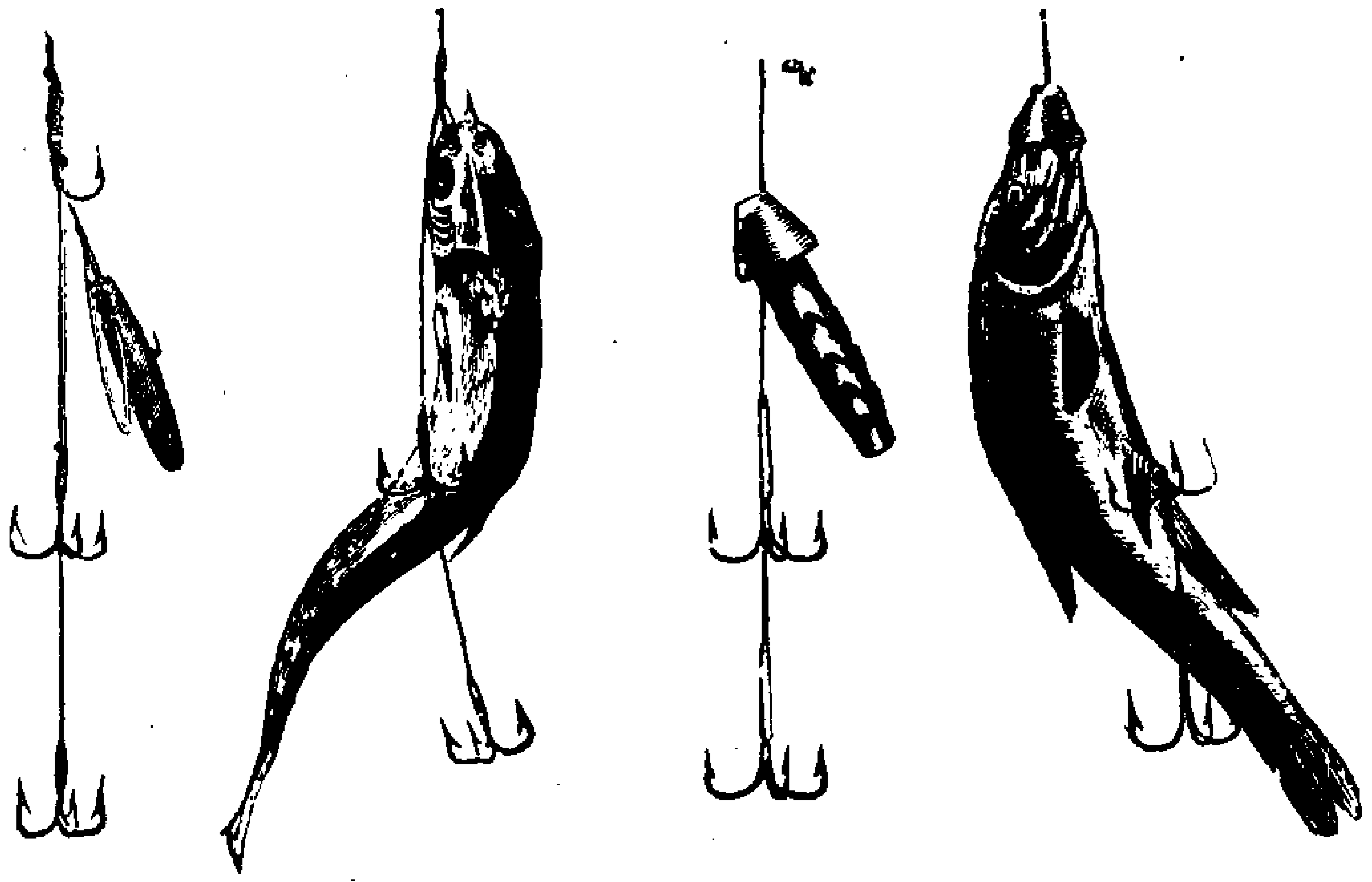


FIG. 1. Unbaited. FIG. 2. Baited. FIG. 3. Unbaited. FIG. 4. Baited.

than from any intrinsic advantage which the artificial imitation possesses. Be this as it may, however, I shall begin with the natural bait, on the principle, if upon no other, that the original should take precedence of the copy.

The difficulty has always been to find a tackle which—whilst placing the lead *in the bait*, and at the same time obviating the necessity, common to most minnow tackles, of detaching the flight from the trace before baiting—will 'arm and spin the natural minnow to sufficient perfection. Figs. 1 and 2 represent a tackle which I believe will be found to fulfil the required conditions.

It is a miniature edition of the flight recommended for lake spinning, pp. 381, 407, where also some further remarks upon it, and instructions for baiting, will be found.

This flight not only gives a very perfect spin to the minnow, when employed as in stream fishing—that is, with a short line, and 'in-and-out' casts—but it combines simplicity and 'fineness' with hooking power. The lead lying in the bait's belly also puts the weight exactly in the place where it is most wanted and least seen. As there is no lead on the upper part of the trace to counteract the rotatory action of the bait and to oblige the swivels to act, so to speak, it will very often be found (unless a 'swiver-compeller' is used) that after a good long 'draw' through the water the twist of the bait has more or less imparted itself to the line, and when this occurs a second or two should be allowed for the line to untwist before the next cast is made. This is, of course, equally the case in spinning with the artificial minnow. By the recent addition of a sliding 'lead-loop' and the substitution of a movable for a fixed lip-hook, the necessity of carrying several different sizes of tackle, to fit different sized minnows, is practically obviated. This was the only objection I have ever heard made to the flight as it was originally published.

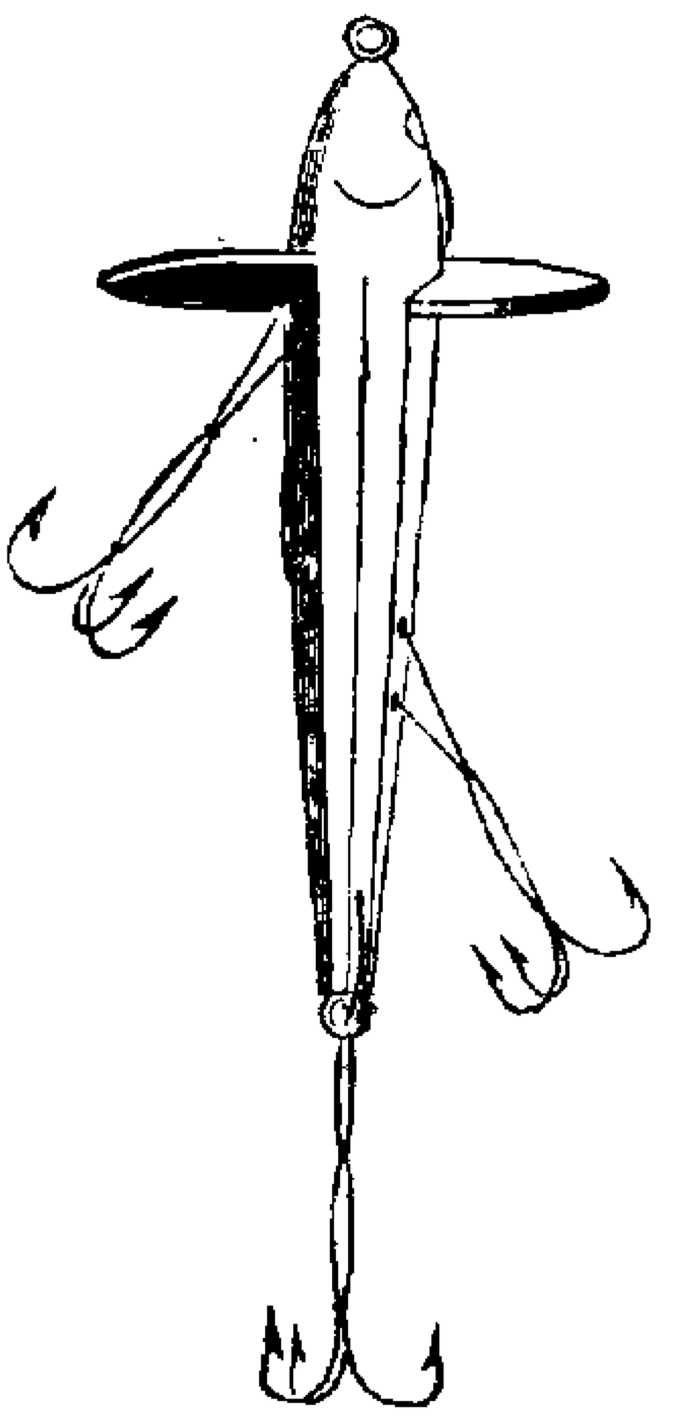
Another excellently good flight is that already described for salmon river spinning, substituting a smaller bait and a corresponding lead. (See cut, the 'Dee' flight, figs. 3 and 4.) Here, however, the hooks require to be detached from the trace.

One or other of these arrangements can be recommended as realising in different ways what are very likely the attain-

able 'possibilities' in the matter of Stream Minnow-Spinning tackle.

The trace should consist of two or three yards of fine picked trout gut, with at least one double swivel not less than two feet above the bait. As, however, in this case no lead is used on the line, I should recommend a second double swivel placed about three feet above the first. The smaller the swivels are the neater will be their appearance and the better they will act. Care should be taken in choosing them to see that all the parts work freely before being attached to the trace or taken to the river-side. When dry, and again before being used, it will be found to make all swivels work much better if they are lubricated with rangoon or some other light oil.

The rod described, p. 395, for worm fishing for salmon, with an extra longish top, or a rod of the same description, but of a somewhat lighter build—always, of course, with stiff rings—'snake' pattern best, see p. 80—and a *very fine* dressed silk running line, not thicker than ordinary sewing thread, will be found most convenient for this sort of fishing, which is applicable throughout the season to every description of running water; sharpish streams, and eddies behind stones and weirs, or pools, being the most favourable.


HEXAGONAL MINNOW.

As a general rule the minnow, whether natural or artificial, should be 'worked' by *short* casts, up, down, or across stream, as convenient.

The engraving gives the form of an artificial minnow that I had made some years ago. I think it possesses in one or two points advantages over the plain brass minnow recommended by Mr. Wheatley, and notably in the position of the flying triangles, which it will be seen are so arranged as to make it almost

impossible for a trout to escape being hooked. This minnow, which is made both of brass and white metal, is hexagonal or octagonal in form, the object being that the sides and angles catching the light may gain additional glitter and brilliancy. One side is coloured a bright metallic green to represent the minnow's back, the other half representing, of course, the belly.

The minnow itself can be so adjusted that the trace and tail hooks will either spin with it, or remain stationary and allow the minnow to spin by itself. Each alternative presents some advantages, but in the former case the gut must be thickened by lapping where it passes through the minnow, so as to fit close.

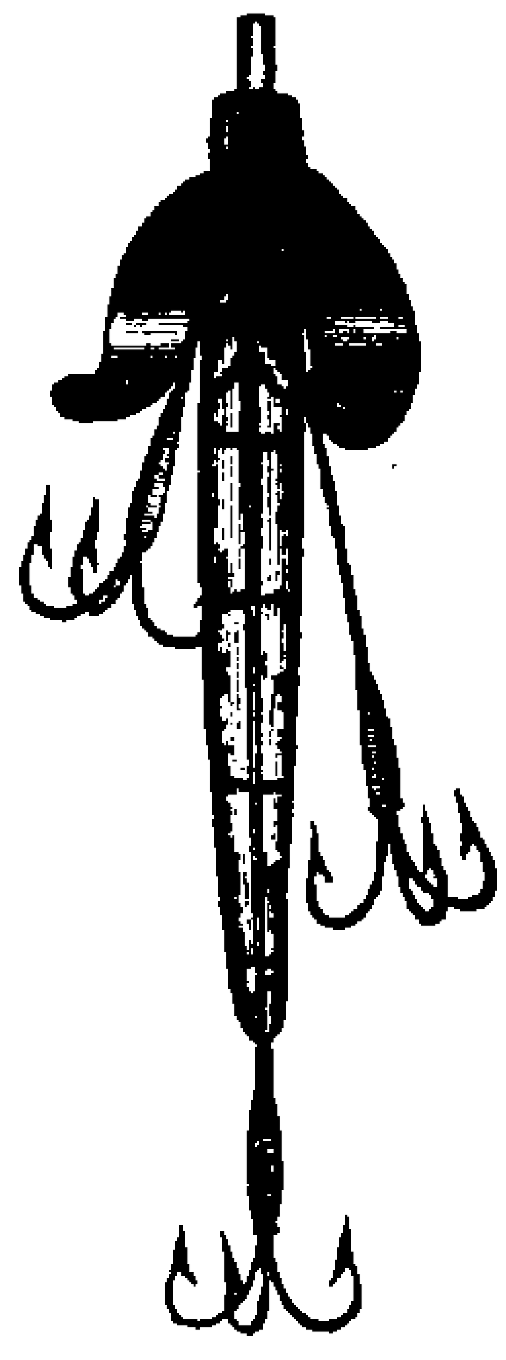


FIG. 1.

THE 'QUILL MINNOW.'

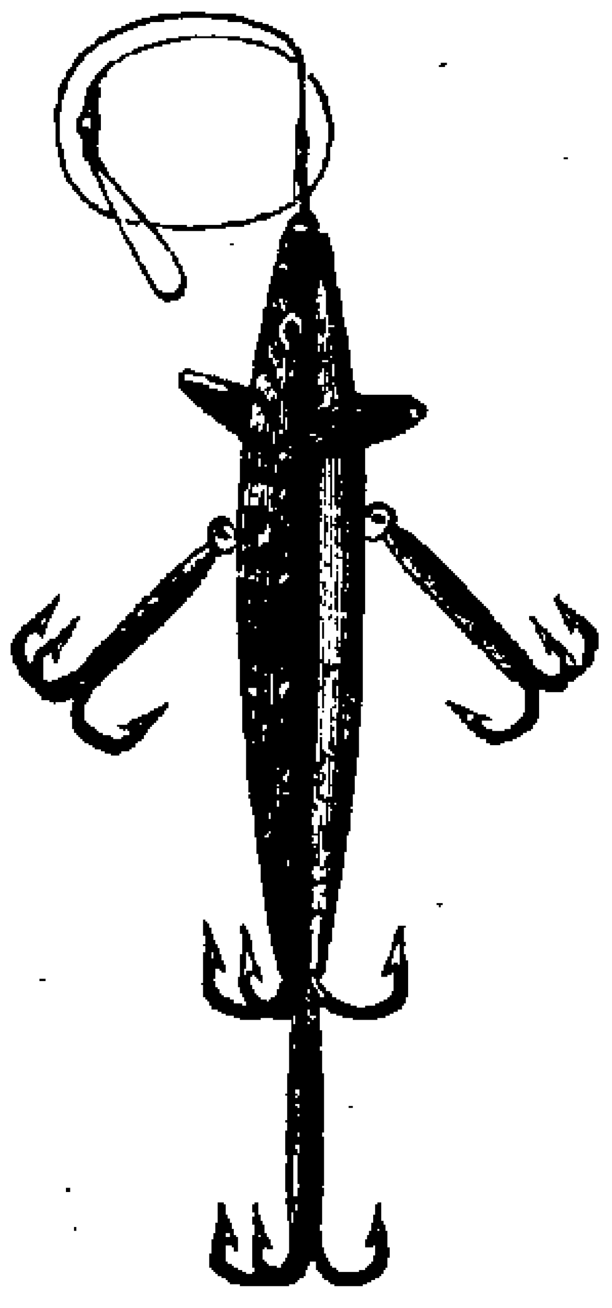


FIG. 2.

FARLOW'S DEVON MINNOW.

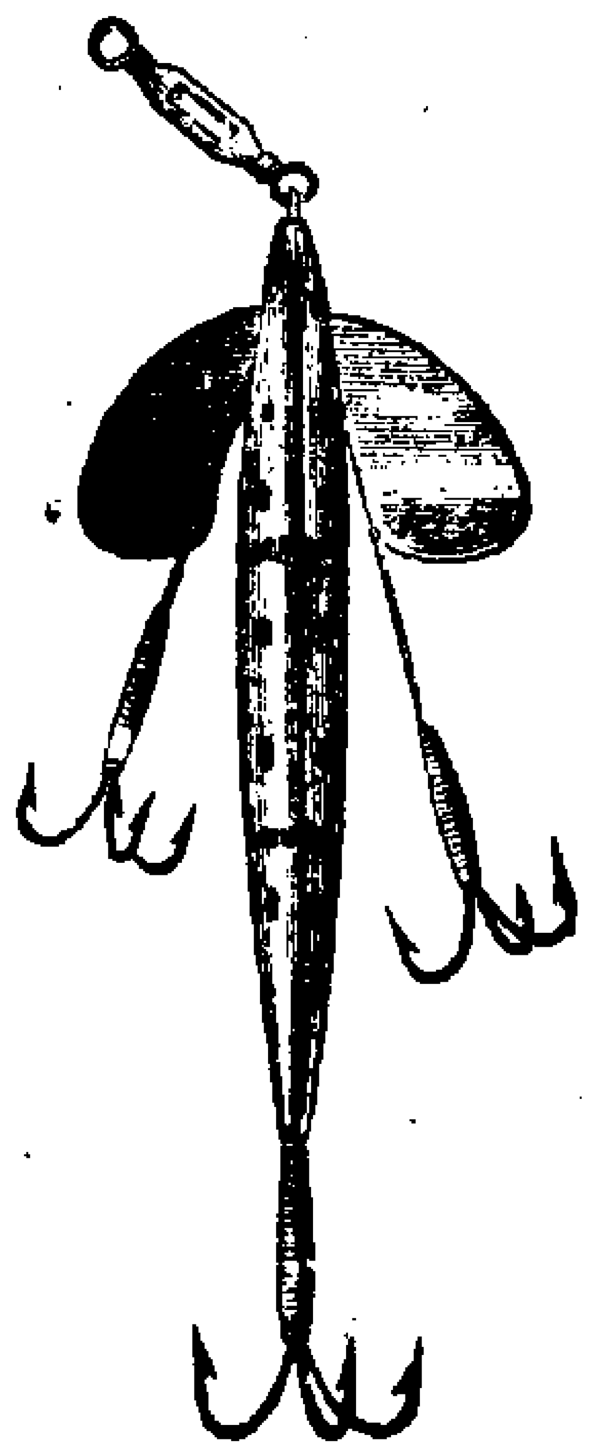


FIG. 3.

HARDY'S EXCELSIOR SPINNER.

A pretty minnow for bright water is made by Messrs. Foster, of Ashbourne, entirely of solid mother of pearl, and painted to imitate the natural. Messrs. Cummings, of Bishop Auckland, make a quill minnow (fig. 1), the invention, I am told, of the

late Mr. Garnett. Messrs. Farlow have introduced a very neat variation of the ordinary solid brass Devon (fig. 2), gold, silver, or painted, rigged to obviate the hook-complications incident to the latter well-known flight. These minnows do not slip up the line when a fish is run. Nor does Hardy's 'Excelsior' spinner (fig. 3), which closely resembles the quill minnow in external form and 'rig,' but is made of solid, or nearly solid, metal. The 'Watchet bait,' in gold and silver, as mounted by Messrs. Farlow (fig. 4), is constructed on the 'slip-up' principle.

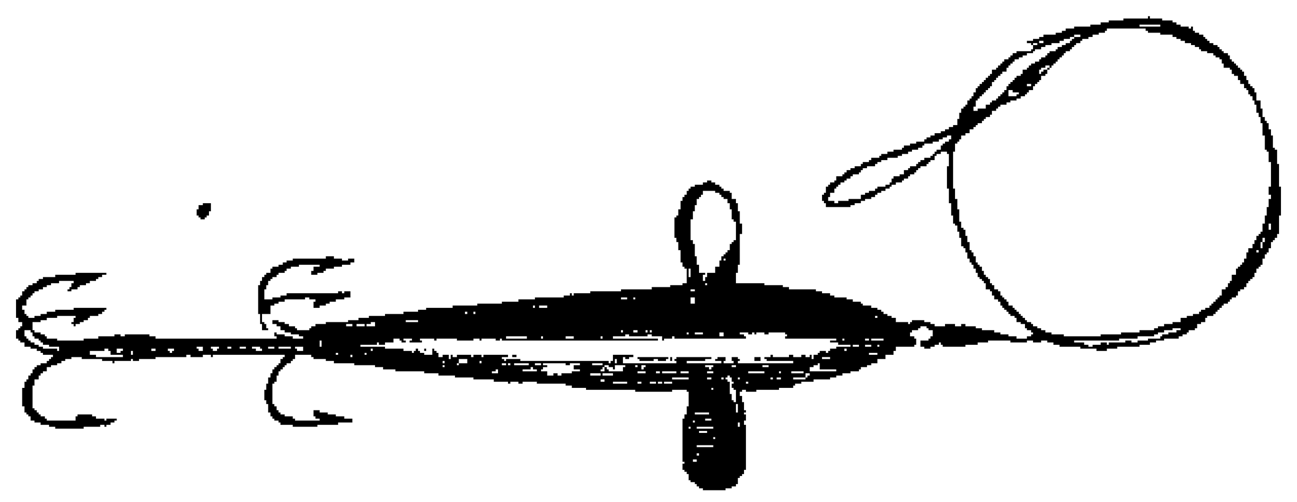


FIG. 4.—'WATCHET BAIT.'

My old friend, the late Mr. Thomas Westwood, bibliophile, poet, and fisherman, in one of the last letters I had from him, writes: 'I tried the other day, with great success, a minnow called the "Derby Trout Killer." It is sold by John Bullock, Compton Street, Derby. Ask for sizes No. 1 and No. 2. I bagged seventeen trout with it in a very short time, and a friend, who fished with me, twenty.'

The minnow, both natural and artificial, can be used at all times of the season, and in all rivers where its employment is not interdicted. It is especially successful in some of the Devonshire and Cornwall streams for taking what is locally known as 'salmon peel'—a variety of migratory *Salmonidæ* to which ichthyologists have not yet agreed in assigning a specific place. Some writers consider it as a sort of small-sized grilse, or the young of the true salmon on its first return from the sea, and others merely as a variety of the salmon trout. Unfortunately many of the streams of Devonshire and Cornwall have been so frightfully polluted of late years by mine water

that this beautiful and sporting fish is far from being as plentiful as it formerly was, and, indeed, from many rivers the brown trout also has well-nigh disappeared.

This is the more regrettable inasmuch as a little energy and enterprise on the part of the mine owners, especially owners of lead and copper mines—the great offenders—would almost, if not wholly, alleviate the mischief. In the case of the former a few catch pits into which the mine washings should pass and be allowed to filter before the water finally reaches the river, would render it perfectly innocuous, and I remember on one of the most beautiful rivers in Devonshire, the Teign, where this precaution has been taken, I have repeatedly caught some of the best trout of the day at the very mouth of the filtered outfall. The lead in this case, as everyone knows, is merely held 'in suspension,' to use the chemical expression, and, therefore, naturally sinks to the bottom by its own gravity, if the opportunity be offered.

With regard to copper mines the case is somewhat different, the copper being held 'in solution,' a far more intimate connection, and one which can only be separated by causing the copper to 'precipitate,' as the term is. In order to effect this, however, all that is necessary is to place some old iron at the bottom of the catch pits; the iron having an affinity for the copper, causes the latter to fall or precipitate, and it is quite a question in my mind whether the process referred to, both in this and the lead water, might not be carried out without any ultimate expense whatever by subsequent treatment of the precipitated and subsident metals. At any rate it is a subject demanding the urgent attention of the Legislature, if only viewed from the standpoint of the just rights of the riparian proprietors, to say nothing of the national importance of preserving our streams for the beautifying of the landscape and the enjoyment of the people. It is simply monstrous that mine owners for their individual gain should be allowed to destroy what the Scotch law calls the 'amenities' of all the people below them. Nor is it alone from the sporting or æsthetic

aspect of the case that this holds true. Streams polluted by mine water not only cease to contain fish and look disgusting, but are a positive source of danger to the health of the population living upon the banks, who, as well as the cattle, often partially poison themselves by drinking the tainted water.

WORM FISHING FOR BROWN TROUT.

Thanks to a great extent to the late Mr. Stewart, worm fishing for trout has been of late years rescued from a position of obscurity, not to say contempt, and elevated into one of the recognised branches of scientific angling. It was formerly supposed that worm fishing could only be practised with success in rivers or streams when in a state of partial flood. The fisherman, wielding a short stiff rod with a single large hook at the end of extra coarse tackle, used to walk down the river banks, when the water was supposed to be sufficiently discoloured, fishing before him or under him the likely looking holes, and hauling out, by sheer force and with the smallest possible amount of law, any unlucky victim which the purblinding condition of its own element was mainly instrumental in transferring to ours. Thanks, I say, in a great measure, to Mr. Stewart and his teaching, all this is now changed, and, although with improved hooks and fine tackle, the worm-fisher will still expect under many circumstances to make a good basket in full or flood water, he regards as his red-letter days a scorching summer sun, and a water so bright and clear as to make fly fishing, except very early and late, next to an impossibility.

Making the best of these unpropitious circumstances, the sagacious angler leaves his fly rod at home and betakes himself to worm fishing. Equipped with wading boots, or, better, wading trousers, he enters the stream, usually preferring a good broad sheet of water, not too deep, and, moving gently and cautiously, with a long, light, stiffish rod, he casts his bait well

up stream, letting the current, with an occasional assistance from hand and line, bring it down almost to his feet, or parallel with him to right or left, and if he gets a bite he strikes almost at once—or at any rate after three or four seconds—down stream, and retires with the descending fish until he has safely transferred it to his creel, usually without quitting the water. He then returns cautiously to his former standpoint and renews his attentions to the still unfrightened fish above—thus gradually ascending the stream step by step, and fishing every yard of water in front of him.

I would not be understood to advocate for a moment the use of the worm, even if practicable, in our highly stocked southern streams, nor would I personally exchange it for the fly whenever there is a reasonable chance of making a bag with the latter, but it frequently happens in such conditions of water and weather as I have described that this is in fact impossible, and there are hundreds of miles of wild river and stream scattered over Ireland and Scotland, and some of our Border counties, where worm fishing finds its legitimate scope and opportunity. And thus pursued I unhesitatingly assert that it is a branch of the sport which is in every way worthy of encouragement.

As the 'Fishing Gazette' has observed: 'There are more ways than one of fishing with the worm for trout, and it depends very much upon local circumstances whether the plan employed is fair or unfair. The man who by up-stream fishing on such waters as the Yore, the Coquet, the Eden, in June, July, and August, can in low clear water kill a basket of trout in the daytime is not less scientific or sportsmanlike than the fly fisher.'

As I have pointed out, an extreme refinement of tackle and niceness of manipulation is required of the successful practitioner in the modern school of worm-fishing. For short rods, coarse gut, and a single big hook must be substituted a long, light, and more or less pliant weapon, the very finest gut, and hooks but little larger than those on which the fly fisher dresses his gnats and midges.

Mr. Stewart was the first to advocate a radical reform in the matter of trout worm-tackle. His change was to substitute three or four small hooks for the one large one. This plan, by which the hooks were quickly and lightly passed transversely through the worm instead of being, as it were, threaded through it, has the additional merit of keeping the bait alive much longer, as well as of enabling the fish to be struck almost at the instant of biting, instead of being allowed some uncertain period in which to fairly 'mouth,' or, as it happens in many cases, 'pouch' the worm.

The drawback to this tackle of Mr. Stewart's was, however, in my opinion, the unnecessary multiplication of the hooks. These produced a certain amount of difficulty and delay both in baiting and subsequent disgorging from the fish's mouth. They also disfigured the worm, shortened its life, and whilst detracting somewhat from the natural appearance of the bait, were at the same time more conspicuous.[1]

Indeed, as a matter of fact, I found it was by no means a very easy matter to insert the three, or, still worse, four hooks in their proper positions in the bait without breaking it.

In order therefore to meet these objections, whilst at the same time preserving the excellent principle involved in substituting several smaller hooks for one large one, I adopted, and some years ago brought to the notice of worm fishers, a two-hook tackle, which I believe will be found to embrace the meritorious part of Mr. Stewart's invention without its drawback. I may, perhaps, here quote from the arguments, *pro* and *con*, which I adduced at the time in support of these views.[2]

[1] *The Practical Angler.*

[2] On looking through the modern school of angling authors, I find the following recommendations and instructions on the subject of worm fishing for trout: Bowlker, in his *Art of Angling*, recommends a single No. 5 or No. 6 hook; Mr. Stoddart advises, in his *Angler's Companion*, single hooks, sizes Nos. 10, 11, or 12, according to the dimensions of the stream, its condition, and the kind of trout inhabiting it; Mr. Bailey, in his *Angler's Instructor*, suggests a single No. 7; Otter's *Modern Angler*, a No. 5; 'Glenfin' (*The Fishing Rod, and how to use it*), a 6 or 7; 'Ephemera,' Hewett Wheatley, and some other authors either simply recommend 'a single hook,' without

I give Mr. Stewart the greatest credit for the originality of this idea, which belongs to him alone; at the same time, I am not surprised at its proving, as he himself admits, only a modified success. Mr. Stewart says that with this tackle he found he could kill larger fish, but fewer in number, than with the single hook, and that this experience was confirmed by others. He attributes, and I have no doubt correctly, the diminution in the numbers of fish run, primarily to the impossibility of properly concealing so large a number of hooks in a single worm, and to their being consequently seen by the fish. This was the principal drawback to the four-hook tackle. As a minor inconvenience, Mr. Stewart also mentions that, from the number of hooks often fixed in the fish's mouth when landed, a certain waste of time necessarily occurred.

These being the incidental disadvantages of Mr. Stewart's plan, its advantages were: (1) that the worm was more quickly baited than with the single hook; (2) that it lived much longer—with the large single hook it dies almost directly; (3) that it presented a much more natural appearance to the fish; and (4) that, owing to the superior penetrating tendency of small over large hooks, much fewer fish escaped after being once hooked, whilst it became possible to use the finest gut, which could not be safely done with large heavy hooks. This is an advantage the importance of which can hardly be over-estimated in trout fishing in clear streams.

As regards the other point—the killing powers—my own experience of the tackle was that when fishing properly *up stream*, and with a shortish line, *hardly any fish escaped at all*, whilst with the large single hook, I think the experience of most of my brother anglers will bear me out when I say that fully fifty per cent. of runs were 'missed.' On the other hand, the practical force of the objections mentioned by Mr. Stewart to his own four-hook tackle could not but be recognised, and accordingly, after some experiments, I adopted a tackle consisting of only two hooks, and these a trifle larger and thicker in the wire, which, I found, whilst getting rid of the drawbacks, also combined one or two material improvements in other respects.

The great advantages, in several points, of the four-hook tackle

naming the size, or omit the question altogether. . . . It will thus be seen that a 'single hook' for trout worm-fishing has been hitherto universally recommended by angling authorities, with the solitary exception of Mr. Stewart, who boldly deviates from the beaten track, and gives a diagram of a tackle composed of four small hooks, in lieu of the conventional single large one.

over the large single hook have been already explained. The advantages which I believe will be found to belong to the two-hook over the four-hook tackle are: (1) It is baited in less than half the time; (2) the worm lives much longer; (3) its appearance is more natural; (4) the hooks are less conspicuous; (5) they are very quickly 'disgorged,' and (6) the tackle is more easily made.

In hooking and holding power I do not think that there is any appreciable difference. . . .

PENNELL'S 2-HOOK WORM TACKLE.

TACKLE UNBAITED. TACKLE BAITED.

As regards sinkers, two or more good sized 'split' shot, according to the depth and rapidity of the stream, should be used about fourteen inches above the hooks. The shot should be sufficient to carry the bait close down to, or nearly dribbling over the bottom, without being heavy enough to make it check or stick fast. In shallow water only one shot, and that a very small one, say a No. 7, will be found necessary. Very fine

lead-wire is a capital substitute for shot, and is less liable to get irremediably 'stuck' in rock-crevices, &c. The difficulty is to twist it round the soft gut in a satisfactory manner. This difficulty, however, I overcome by laying a pin alongside of the gut and winding the lead-wire closely over both. The pin being withdrawn, the coils can be tightened very readily by simply twisting them round with the finger and thumb until they grip the gut. This method of weighting is less likely to result in damaging the gut than a split shot, which is nipped together and jammed on to it with the teeth.

In order to cast a light line of this sort, which, of course, cannot be done at all against the wind unless the line be cast as a fly-line, a 13 or 14 foot rod—or even longer—with small upright rings, and a fair amount of 'play' is desirable. The line should be of the very finest dressed silk, not thicker than stoutish sewing cotton. The length of cast that can be made depends, of course, very much upon the wind ; under ordinary circumstances, however, unless heavy sinkers are used, the line that can be effectively worked will not much exceed the length of the rod, *plus* the gut cast of two or three yards.

The best worms for this sort of fishing for trout, and I might say, indeed, for every sort of fishing that I am acquainted with where small worms are used, is the brandling, or dunghill worm, which may be known by its yellowish stripes and the pungent odour it emits. This strong smell is, no doubt, one cause of its attractiveness as a bait. If brandlings cannot be obtained any worm which is of the right size will do—the redder the better. It is very important that the worms should be thoroughly scoured before being used, as it diminishes the chances of their breaking on the hook, as well as improves their appearance. The readiest means for scouring is in a large jar or box filled with damp moss turned every day or two.

The hooks figured in the illustration are of the correct size for a large brandling of the length shown. *When smaller worms are used the size of the hooks, and also the distance between them, should be reduced proportionately.*

To carry the baits for worm-fishing an open-mouthed bag, from three and a half to four inches square, and attached to a button of the coat or a button-hole by a loop of string, will be found much the most convenient method. Indeed, when constantly wading knee- or waist-deep in water, any other plan is almost impracticable—unless it be that of the smal. angler whose answer, when asked 'What it was he was carrying in his mouth?' has become proverbial.

In spite of the *medio tutissimus ibis* maxim, there is yet a certain drawback attached to this sort of mid-river work,—the drawback of losing time and disturbing the water by getting out on the bank for the purpose of landing the fish. On the other hand, the attempt to transport them direct from the water to the creel without a landing net is an almost hopeless, as well as patience-trying, undertaking. The worm-fisher must, therefore, practically as a matter of necessity, adopt a portable landing net, and that should be so arranged as to be instantly brought into play when required. To effect this some fishermen carry a very short net with a wooden hoop, and a handle about one and a half foot long which they pass under the creel-strap, or a small strap attached to the coat, under and behind the left arm, and thence into the pocket. The best form of hoop for this sort of pocket net is pear-shaped, about eight inches wide by eleven inches in length. Such a net ought not to exceed 3 or 4 oz. in weight, everything complete, and with it a fish of two or three pounds weight can be landed. (See chapter on Tackle).

During nine days' fishing in the Cumberland Eden and neighbouring streams Mr. Matthew Humble, Chesterfield, killed 410 trout. He had forty-six a day on an average. He used the Pennell tackle. Several of the baskets weighed 20 lbs. or 21 lbs.; the lightest was 12 lbs. Mr. Humble's was certainly by far the most successful recent fishing in the North of England.—The *Rod and Gun*, July 4, 1889.

'CREEPER' AND STONE-FLY FISHING AND WASP-GRUBS.

Creeper or stone-fly fishing is a very local sport, and, indeed, so far as I am aware, is practised nowhere but on the Border and Lowland streams of Scotland.

Having said all I know on the subject of this fishing—and it is not much—in the 'Modern Practical Angler'[1] I quote the following from its pages :

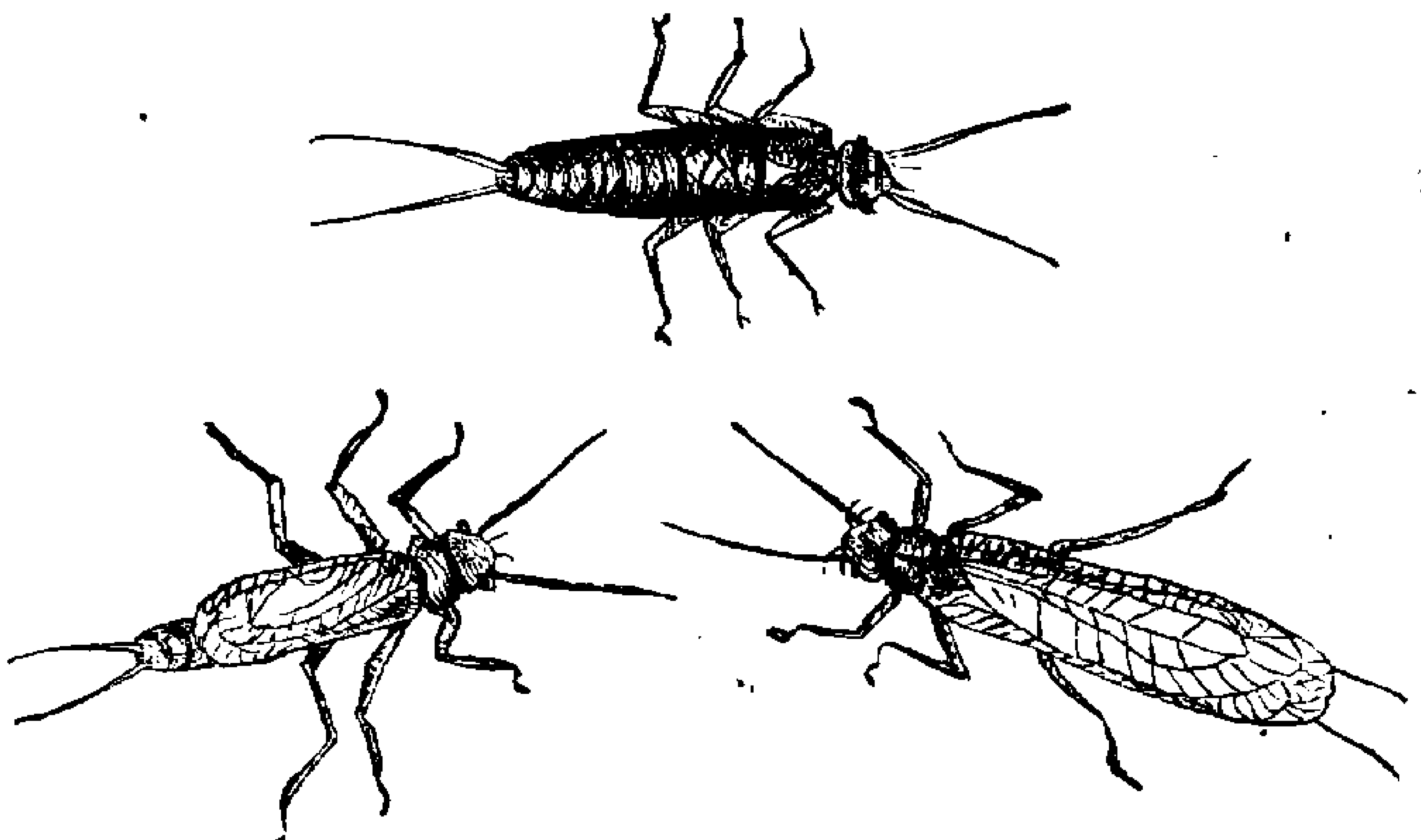
The creeper is the larva of the stone-fly (*Scottice*, May-fly), in which condition it passes most of the winter and spring months, living under stones in shallow water, from whence it may generally be readily obtained in quantities sufficient for angling purposes. It will live for days in any perforated can or bait-box, even if kept in the pocket, and for a longer time in a little water.

The rod, line, and hooks recommended for trout worm-fishing, and described under that heading, omitting the shot or sinkers, and setting the hooks a little closer together, will probably be found, on the whole, the best tackle for creeper-fishing. The mode of baiting and using the creeper is as follows : Put the upper hook through the shoulder, and the lower hook through the tail of the creeper, so that it may hang straight on the line : when baited, use it precisely in the same manner as the worm, always selecting rapid rather than still parts of the stream, and, of course, fishing up. The bright weather and low clear water, which are best for worm-fishing, will also be found most favourable for the creeper. The stone-fly usually remains in its larval or 'creeper' condition until the middle of May, and from early in April until this time heavy baskets may often be made of it. When in season, the creeper is commonly from an inch to an inch and a quarter long.

About the middle of May the creeper changes from the larval into the fly state, casting its tortoiseshell-like covering, and unsheathing its wings, of which, however, it makes but little use. Mr. Stewart, whose excellent chapter on the subject should be studied by all Border anglers, considers that the fly is even more deadly than the creeper. He advocates the use of two flies as the bait. . .

[1] Fifth edition : George Routledge & Sons.

The fly is nearly of the same length as the creeper, and the tackle used for one may be used for the other. In fact, when creepers are changing the fisherman will often find it convenient to fish indiscriminately with either the one or the other. Trout take the stone-fly best *under* water, and *close to the edges* of the stream or pool. This point is laid much stress on by Border anglers, and with good reason, inasmuch as the natural spots to find the fly are close to the banks from which they are washed; and it is here consequently that the trout come to look for them. A dark, full water is more favourable for the effective use of the stone-fly than one that is low and clear; but in both states good baskets may be made with it. The flies should be collected in a box the night or early morning before they are to be used. The best places for finding them are under the stones above, but near



MALE. FEMALE.

the water's edge; and where most cast-off shells are seen the fly will probably be found in the greatest abundance.

Colonel Campbell tells me that, on the Border streams, he has had great success with this fly used with blow-line tackle. A method of natural fly-fishing is also much practised on the Peterel, and doubtless on many other neighbouring streams, in which two flies —the specific names of which I could not ascertain—are used upon a small double hook.

The season for stone-fly fishing begins about the middle of May, and ends about the middle of June.

I have had some specimens of the creeper and stone-fly sent me by the obliging assistance of Messrs. Redpath, of Kelso, and the annexed sketch gives a diagram of the stone-fly in different stages of development. Messrs. Redpath have also made a special study of artificial imitations of this insect, both in its winged and larval condition, and have forwarded me samples, which I must say look exceedingly tempting and life-like.

Besides stone-fly fishing, the only really effective methods of using the natural fly are either by 'dapping'—i.e. dropping the fly over bushes, &c.—or by the 'blow-line;' and the place to see blow-line fishing is the Westmeath lakes. Indeed, this beautiful chain of waters seems to be the natural *habitat* of the art. Each lake in its turn, as the fly appears on it, becomes for a few days a centre to the angling community, and many a boat which, as Pat says, is only safe provided you do not 'cough or snaze,' is then dragged from her moorings—perhaps at the bottom of the lake—and pressed into service. The art of blow-line fishing, though in its principle exceedingly simple, demands some nicety of execution in practice, and, as indeed its name implies, it cannot be pursued at all without the assistance of that most inconstant element, the wind. Weather, however, proving propitious, the tackle is easily adjusted. A skein of floss silk, prepared for the purpose, and attached to the end of a light running line, is substituted, so far as the actual casting is concerned, for the 'reel-line,' and to this, instead of the ordinary fly-collar, is fastened a single small hook whipped on a strand of fine gut. The hook is baited with a May-fly, and as the boat drifts the wind carries out the floss silk, which ought to be so managed by the aid of hand and rod that only the hook and fly should actually touch the water. Many fishermen dispense with the floss silk arrangement, and employ merely a few strands of gut at the end of a light undressed running line. The Daddy or Hairy long-legs (brief 'Harry') is also much used in Ireland, especially after the close of the May-fly season. The tackle is the same as that last described, and two 'longlegs' are impaled on a moderate-sized hook—about a No. 6 or 7 ('New' scale), I think it was that I saw used on Lough Erne. The Harry long-legs is much tougher than the May-fly.

The exact time for this fishing varies a little, as the spring has been cold or genial; and the several lakes vary also *inter se*, which

is a great convenience to the fisherman; but from the middle to the end of May or early June is commonly about the time, and if the angler puts Dr. Peard's charming little book, 'A Year of Liberty, into his portmanteau, he will need no abler or more agreeable guide.

An analogous system to that above described is pursued occasionally on some streams in England; but on others it is strictly prohibited, and on many hardly considered fair fishing. The circumstances of the two cases, however, are entirely different.

THE WASP-GRUB.

In some rivers, such as those of Shropshire and Herefordshire, the wasp-grub is occasionally a very killing bait for trout, although, curiously enough, grayling are but seldom taken with it, even in rivers where they most abound. The only difference as regards tackle, method of fishing, ground baiting, &c., between wasp-grub fishing for trout and gentle-fishing for grayling, as described further on, is in the size of hook, which should be about a No. 6 or 7 'New scale.' Two wasp-grubs may be used as the bait; the first run right through from head to tail and drawn up the hook-shank, the second covering the point and bend of the hook.

Though an excellent bait for trout, and, indeed, said to take the finest fish and those in the best condition, the wasp-grub is an exceedingly delicate bait to manipulate. So delicate, indeed, as not to be fit for use in its natural state, and to require much care and attention in preparation.

The plan adopted by Mr. Jones, of Ludlow, an apostle of this kind of fishing, was as follows:

To a pot of boiling water add a little salt, and whilst it is boiling put the wasp-grubs into it for two or three minutes. Take the pot off, then pour the water and its contents through a sieve, and when the grubs have remained a minute or two to 'draw' put them on the hob on a duster, or on a piece of flannel, or cloth of some sort, for about half an hour. This draws out the moisture and makes the grub sufficiently tough to remain on the hook.

In selecting the baits for the hook choose the specimens which are the least wasp-like in appearance, and put the others aside to be used as ground-bait in the manner described with regard to gentle-fishing.

Here is a receipt for taking a wasp's nest: Cover your face and head with a veil over a fencing mask. Tie your trousers and coat-cuffs at the bottoms, put on a pair of stout gloves and proceed with a shovel to quietly dig out the nest. This is the way to get stung; which I can answer for as I have tried it. If, however, you have any objection to the process, then you will find it the better course to preface the 'digging out' by first suffocating the wasps with a sulphur and gunpowder squib in the manner which will be found detailed in Vol. II.

The mention of Wasps reminds me of a much worse plague to anglers—I mean the ubiquitous and tormenting Midge—whose elimination from the plan of nature would leave 'a gap behind' most welcome to most of us, whatever poets and philosophers may say to the contrary.

I have myself found a mixture of turpentine and glycerine very useful as a 'midge antidote;' but here is another and more recent one, the efficacy of which is avouched by Mr. R. B. Marston:—

MIDGE AND FLY ANTIDOTE.—During the first week in this month, when fishing the Wye in Herefordshire, the weather was intensely hot, and the flies an intolerable nuisance. It struck us that it would be an excellent opportunity for still further testing Mr. Hind's Black Fly Cream, an American preparation which is advertised in our columns as obtainable from Messrs. Newbery and Sons, 1 King Edward Street, Newgate Street, London. We found that although they often attempted to do so, no fly would stop for a second on any spot to which the cream had been applied; also that it prevents sun-burnt ear and nose-tips.—*Fishing Gazette*, August 17, 1889.

THE GRAYLING, AND BAIT-FISHING FOR.

CONTINUING my observations on bait-fishing for *Salmonidæ*, I come next to Grayling—the remaining British representative of the family possessing any great interest for the sportsman, and, indeed, ranking 'with but after' its 'star-stoled' cousin of the brook, *Salmo fario.*

When grayling, or grayling fishing, is the subject of conversation among fishermen, almost the first thing one is sure to hear is a discussion of the relative merits of this fish, from an angler's point of view, as compared with the trout; and a consensus of opinion is usually at last arrived at that the trout is in every way the more mettlesome and sporting fish, but that the grayling possesses one unique advantage over him, from a fly-fisher's standpoint, in that he is in prime condition when the trout is out of season, and, of course, unfit to be taken. Trout, in fact, spawn during the late autumn and winter months, and grayling during April and the early part of May, when they come up the gravelly scours in shoals, in this respect resembling dace. The grayling has, moreover, the advantage of rarely being so much out of season as to be unfit for food, or unwilling to take a bait if judiciously offered. Sir Humphry Davy, who has given us a very fair history of the fish, considered that it might be fished for at all times of the year, and that when there were flies on the water it would generally take them.

As regards external similitude, there is, of course, no real comparison to be made between the trout and the grayling, the latter bearing really a greater resemblance to the vendace, and

others of the herring-shaped species, or *coregoni*, and especially in the matter of the size of the scales which are large and chub-like, whilst the scales of the trout are exceedingly small, and in the charrs even minute. The basis of the colouring in the scales of the grayling is rather silver than gold, and when in the height of condition—that is, in October or November—and just taken from the water, he is certainly one of the most beautiful fish that swims. At this time the back is of a deep purple or claret colour, with small dark irregular spots on the sides; the stomach is brilliantly white, with a fringe or lacing of gold; and the tail, pectoral, and ventral fins are of a rich purplish tint. The dorsal fin is very large—almost disproportionately so—and is covered with scarlet spots and wavy lines upon a ground of reddish brown. The little 'velvety' back fin near the tail is also dark brown or purple, and the whole body is shot with violet, copper, and blue reflections when seen in different lights.

Properly to appreciate this colouring, the fish should be laid horizontally upon the hand to be looked at, in which position its varied tinting is seen to the greatest advantage.

The specific name, *thymallus*, or 'thymy,' is derived from a peculiar smell which is said to be possessed by the grayling, but which, I must say, appears to me to resemble rather the odour of cucumber than that of thyme. Its familiar name 'grayling,' is probably a modification of 'gray-lines,' having reference to the longitudinal dusky-blue bars with which its body is marked.

The grayling is essentially a local fish, and, as compared with the trout, may be even said to be rare, only certain soils being apparently suitable to its development—or, perhaps favourable to the production of the insect-food on which it in a great measure subsists. It thrives best in rivers the bottoms of which are composed principally of sandy gravel or loam. Rocky or stony bottoms are very inimical to its breeding; and this is probably the reason why, though flourishing in many Continental waters, none exist, so far as I am aware, in those of Ireland or Scotland. Indeed, even in England, a dozen

names or so include all our streams which have any right really to be considered as properly grayling waters; and these, with hardly an exception, belong to the southern and western portions of the island.

Some years ago the attempt to introduce grayling into the upper part of the Thames was made by Mr. Warburton, who turned in a considerable number of store-fish, but they never became acclimatised, and at last practically disappeared. The case is, no doubt, accurately stated by Mr. Blaine, when he says, 'Grayling require other peculiarities of location besides those of temperature, such as, for instance, the general character of the water they inhabit, and certain circumstances in the nature of its composition derived from its sources.'

It is probably owing to the absence of some of these requisites that the breeding of the fish in several rivers in which they have been attempted to be naturalised has not been attended with success. In some they soon disappeared; in others they remained, but never thrived; while in some waters, though they lived and at first increased, yet they were afterwards observed to shift their quarters to different grounds, in most of which cases it proved, as in the Test of Hampshire, that they emigrated from above downwards, probably in search of deeper and more tranquil waters. For the grayling-fisher cannot fail to observe that this species does not, like the trout, affect very rapid shallows and the coldest torrents; on the contrary it seems to thrive best where milder currents alternate with deep and extensive pools. On the rapids, however—or 'stickles,' as they are termed—small grayling may frequently be found, but the large fish rarely, except in the spawning season.

The haunts of large grayling are the deepish and slow running tails of streams or pools, a few yards before the formation of fresh shallows; and here they will be found *at all times*, except when spawning.

It will thus be seen that grayling are fastidious, not to say capricious, in their choice of habitats; yet it has been proved by experiment that they will thrive even in ponds the conditions

of which are otherwise suitable. Such a pond, of an acre or so in extent, exists to my knowledge within a few miles of Ludlow. It is fed by a fine spring, and the grayling which were put into it, I have been assured, both thrive and fatten wonderfully. Unfortunately a reference to my notes does not enable me to say whether they also breed. As a rule it has been found by experiment that even in ponds where they will live —such as those, for instance, newly cut in hard soil or which have been recently and thoroughly cleaned—they do not breed.

Of the counties producing these fish, probably Herefordshire and Shropshire contain the best, as they certainly contain the most celebrated streams; the former includes the Teme, Lugg, Wye, and Arrow, and the latter the Clun and the Teme, distinguished as the head-quarters of the well-known Leintwardine Club.

In Hampshire and Wiltshire, the grayling is found in the Test, Wharf, and in both the Avons ; in Staffordshire, in the Hodder, Trent, Dove, Blythe, and Wye ; in Derbyshire, in the Dove ; and in Merionethshire, in the Dee, between Curleen and Bala ; in Lancashire, in the Ribble ; Yorkshire, in the Derwent, Yore, Wharfe, Rye, Swale, Costa, and Dove ; Berkshire, in the Kennet ; Scotland, Clyde and (perhaps) Annan.

'Grayling,' observes Mr. H. R. Francis, 'are oddly distributed in the British Isles. I know of few in Scotland or Ireland, while in England the streams haunted by them seem capriciously distributed in groups according to no traceable rule. Yorkshire has many, chiefly to the north and east ; Derbyshire many ; Lancashire, as far as I know, only the Ribble. Southward, after an extensive *hiatus*, we have the grayling streams of Shropshire, and Herefordshire, and again not a few in the south of South Wales. There are good grayling in several of the principal Hampshire streams, and I think I have heard of a few in Wiltshire, but in the centre and south-east of England they are not to be found.'

Of the above grayling waters by far the finest streams are the Dove, the Lugg, the Test and the Teme. The last-named

river contains, in addition to some remarkably beautiful scenery, probably the best grayling water in the world—certainly in England; and the Teme grayling has the reputation of being the first in the market. It was in the neighbourhood of the Teme, at Downton, that Sir H. Davy wrote his 'Salmonia, or Days of Salmon Fishing;' and I have enjoyed some excellent sport on this river through the kindness of its owner, Mr. Boughton Knight, of Downton Castle.

In weight the grayling rarely exceeds 3 lbs., and by far the greater number of fish taken are under 1 lb. Occasionally, however, they are even met with of even a larger size than the above-named: Mr. T. Lister Parker took three fish in the Avon, near Ringwood, which together weighed 12 lbs.; a grayling of 4½ lbs. weight was killed in the Test, and one of 5 lbs. is recorded to have been taken in the neighbourhood of Shrewsbury.

Bowlker, in his 'Art of Angling,' says that the largest grayling he ever knew weighed 5½ lbs., and Mr. Jones, who was well known to Ludlow grayling fishers as a most skilful and indefatigable angling attendant, tells me that he never knew or heard of a bigger. He himself caught one weighing 4 lbs. 5 ozs. in the presence of Mr. Walcott, of Bitterly Court. This was with a single hair and a gentle. The fish was stuffed by the late Dr. Buckley, of Shrewsbury. It is curious that though Bowlker was a Ludlow man, and doubtless a good grayling fisher, he does not mention the artificial grasshopper at all in his book. Jones claims to have been the first to introduce it, at any rate in the neighbourhood of Ludlow. In the Leintwardine Club there are only certain days of the year on which, if I remember rightly, grasshopper fishing is allowed, a precaution that may, perhaps, be necessary on club water which is liable to be assiduously and closely fished. The limit of size under which the Club used to permit the taking of grayling, either with bait or fly, was 10 inches.

In connection with this, the limitation of size, naturally occurs that of the growth rate.

One-year-old fish are locally termed 'pinks;' at two years, when they weigh about quarter pound, they become 'shett' or 'shut' grayling; and afterwards 'grayling.' The 'pink' grayling have neither spots nor lateral lines observable. 'Shett' grayling have spots, but no well-marked longitudinal lines as seen in the full-grown fish.[1] At three years old the grayling weighs about half to three quarters of a pound in average waters, and is supposed by some authors to continue growing at about the same rate, viz. a quarter of a pound per annum, until reaching its maximum weight, which may probably be considered under ordinary conditions from four to five pounds. Other authorities, on the contrary, say that after half a pound the grayling grows fast, and that the next or fourth year he puts on another pound. A grayling weighing half a pound spawns, but a 'shett' grayling does not.

The ova are numerous, but considerably smaller than those of the trout, being about the size of partridge shot, and when seen in the rays of the sun, look very much the colour of the opal. The body of the embryo fish becomes distinctly visible in about nine days, and the egg itself hatches in fourteen or fifteen days from the date of deposit,—results obtained in the case of the eggs of the trout, in about thirty-five and fifty days respectively. The spawning time, as already observed, is in April and the beginning of May, the fish getting into condition in July, and reaching its prime in October and November, when most of the other *Salmonidæ* are going off.

Besides flies, worms, caterpillars, and the like, the food of the grayling consists of the larvæ of dragon-flies, May flies, and other ephemera, remains of the cases of the former and the skins of all of them being frequently found in its stomach. In the winter months the grayling will commonly rise at the fly from about twelve o'clock until two, if there is any sun.

Into the question of fly-fishing I do not purpose to enter, as it has been ably dealt with elsewhere in this volume by Mr. H. R. Francis. I may, however, add a hint which I believe

that gentleman does not give, namely, that when the fish refuse the fly at surface, *they will frequently take it if allowed to sink towards the bottom.*

Although instances have been known, and that not infrequently, of grayling taking the spinning minnow, it is not believed that they resemble trout in their minnow-feeding propensities, or that the minnow forms any important part of their dietary. The best mode of bait-fishing is undoubtedly with the gentle, either in connection with the artificial grasshopper, or on the hook of an artificial fly, or by itself.

To take the last first, gentle-fishing with the float is a most killing method of taking the grayling. Indeed, Jones, the fisherman aforesaid, whose experience is, perhaps, unequalled, has repeatedly told me that he considered it, on the whole, the most deadly method that could be practised and that it will not unfrequently succeed when all other baits fail. It is especially good when the water is too much coloured for flies. The *modus operandi* is as follows :—Take a long stiffish, light rod and a fine running line—such as Nottingham silk, for example—with very fine gut, or, still better (*pace* Jones), single hair float-line, and a very small hook, about No. 1 of my patterns, which should be baited with two gentles, never more. A float about three inches long and exceedingly light should be used, with a single good-sized shot, say No. 3, about three-quarters of a foot above the hooks.

The float should be light enough for this shot to 'cock' it properly. Choose a very quiet hole or swim, and plumb the depth ; allowing sufficient float-line over to let the shot touch the bottom. For ground bait use gentles simply—either carrion or liver—and proceed to fish as if for roach, the only difference being that a little more time must be allowed in striking a bite and the stroke should be a very gentle one, as the mouth of the grayling is delicate. It is a good plan in ground-baiting to keep on throwing in a few gentles—say half-a-dozen or so at a time—so that the attention of the fish may be kept, as it were,

constantly occupied; especially throw in gentles every time after catching a fish, *or even when one has been hooked or lost.* Indeed, if you are sufficiently nimble to accomplish the feat, it is a great element of success in making a bag to throw in ground bait while the fish is actually being played—a plan which I have also adopted with success in roach fishing.

By following out the above method, the grayling fisher may often catch nearly every fish in the hole or swim, and sometimes very heavy specimens. Half a pint of gentles are enough for one day and one rod, but I think half a quart is still better.

For this style of gentle fishing the Nottingham method is particularly deadly, and I have been assured that Worcester fishermen lower down the Teme, by Tenbury, and so on, make large takes of grayling in this way, using a float almost big enough for jack! For an account of the Nottingham style of fishing see Vol. II.

Ludlow was the head-quarters of the old school of 'gentle fishers,' but of late years this method has dropped much into disuse, although still occasionally practised. The masters of the art of grayling fishing with gentles always preferred hair to gut, as being finer, less visible, and longer in the strand, also because it never 'frays or frets,' however much it may be used. It also floats, which is better for some reasons for the play of the gentle, and probably makes it less likely to catch in the ground. Its use, however, is confined to gentle fishing, being unsuitable both for the fly and grasshopper; in the latter case not being strong enough, and in the former its 'flotation' being an objection, inasmuch as many grayling take the fly under water, as I have before pointed out. Gut, of course, sinks instead of floating.

The hair for the purpose indicated should always be taken from an entire horse.

These notes on grayling fishing with the natural bait would be incomplete without a reference to a somewhat local, perhaps, yet as practised by its professors, apparently a very deadly

method of using the worm, somewhat after the 'Nottingham style.' As I have had no personal experience in this branch of grayling fishing, I have taken the liberty of quoting from an able article on the subject, which recently appeared in the 'Fishing Gazette,' by Mr. Francis M. Walbran.

The author of a 'Book on Angling,' observes this gentleman, makes the remark that 'As the grayling is such a sporting fish, and so free to rise to all comers, it is a disgrace and a shame to treat him like a poacher, with worms and such abominations. Now, this may be all very well when you are dealing with the denizens of Hampshire or Derbyshire streams, where fly-fishing may be carried on almost into winter, with reasonable expectation of success; but anybody who pays a visit to any of our Yorkshire rivers after about the middle of October will find that, if he intends to kill anything like a respectable dish of grayling, he will be obliged to have recourse to some other method of luring them than the artificial fly.

My object in writing is to explain to those of my readers who may be unacquainted with it, the favourite mode of fishing for the grayling adopted by anglers in this district during the winter months, and which is termed by them 'swimming the worm.' As regards sport, I consider it little inferior to clear-water worm fishing for trout, and I venture to predict that any angler who may try his hand at it and become an adept, will come to the conclusion that it is equally a scientific amusement.

The weather ought to be bright and frosty, with the water low and clear, to ensure success in this fishing. Melted snow or 'broth,' as it is called, immediately spoils sport, and if the rivers are at all flooded through rain, you are unable to get to the places where grayling usually frequent, and, in addition to that, they never feed really well in either a rising or falling state of the water.

The rod should be about eleven feet in length, light, and inclined rather to stiffness, but not too much so. An ebonite check reel, with a fine braided waterproofed line, completes that portion of your equipment, so we will now pass on to the tackle, then to the consideration of bait, and finish up with a description of the *modus operandi.*

Prepare a cast three yards in length, tapering down to the finest drawn gut procurable, and on this wrap with red silk a No. 4 fine wire round-bend hook, with a piece of stiff bristle projecting

out about one-eighth inch from the upper portion of the shank; weight the tackle with a single swan shot attached to the line about 12 inches from the hook; the float should be made of cork about the size of a marble, with a hole bored through the centre, and an adjusting plug of either quill or wood.

Opinions seem to vary as to the most suitable kind of worms to employ, some preferring the brandling, others the small red worm found in rotten leaf mould, which is known as the 'cockspur' in some districts; and, as far as my experience goes, I have always found the latter prove the more attractive bait of the two.

Insert the point of the hook into the worm about one-eighth inch below the head, and thread it up the shank over the projecting piece of bristle, which will keep it in its place, allowing the tail of the worm to hang straight down, with the point and bend of the hook exposed. As a general rule 18 inches is about the proper depth at which to adjust the float, so that the worm may swim 3 inches or 4 inches from the ground; but, of course, it all depends upon the stream in which you are fishing.

All being now ready, let us adjourn to the river, and look out for a likely spot in which to commence operations. As I write I can picture just such a place in my mind's eye—a stream upon my favourite river—the Yore. It is perhaps half-a-mile in length, having a uniform depth of about 2 feet, excepting at the tail of it, where it runs gradually off into a deep pool. At the head of the stream it is rocky, the water running sharply round the moss-covered boulders, forming below them those quiet little eddying pools that grayling especially affect. Step into the edge of the stream and letting out line to about the length and a half of your rod, cast your worm lightly just above that rock; jauntily rides the tiny float into the eddying pool below, and just as it is veering round a slight stoppage occurs—only for a moment, however, and then moves on as before; pull out and examine your bait. Ah! I thought so. The tail of your worm is gone; that was a grayling, my friend, and the next swim I will wager anything that you 'nail' him. Another cast; once more the float stops in exactly the same place, but this time drags as though the hook had caught in the bottom. Now, then, strike with a firm turn of the wrist—*habet*! a good fish, too, to judge by the resistance that he makes. Gently, gently; do not hurry him. The tackle is fine and his mouth tender. There, he turns on his side at last; slip the net under him and transfer him to your basket.

Just a nip of 'Scotch' to commemorate the first fish, and then proceed cautiously down stream, trying every likely place within reach. Towards the end of the stream we approach a belt of willow trees which fringe the water's edge. Under the shade of their pink roots many a lusty member of the Salmo Thymallus family has his home. Let out a long line as in roach fishing, and allow your bait to swim down about half a yard or so from the side. There goes your float. No mistake about that bite, as the merry music of your reel testifies, the fish taking out line rapidly. A 'pounder' this time, and if some of our sceptical friends who deride the idea of a grayling being comparable to trout, as regards gameness, could witness or experience the 'play' of a fish like this, hooked upon drawn gut in the height of season, I fancy that they would alter their opinions somewhat.

But the struggle comes to an end at last, and as you dip him out of his native element in your net you cannot help but admire his perfect symmetry and beautiful colouring. How handsome he looks as he lies on the frozen grass, the rich crimson of his large dorsal fin contrasting so well with his black back, and the green and purple sheen of his silvery sides with the milky white of his belly.

But come along; we must waste no time, for the days are short at this season of the year. Past the willows we come to a shelving bed of sand and gravel. Cautiously now, my friend, for this is the best swim of all. Over that bar of gravel the stream runs into a deep pool; adjust your float a little deeper, and proceed as before. No result the first attempt; your line is out at full stretch; the float drags on account of the sudden check, and you prepare to pull out for another swim. But before you are almost aware your rod top receives a sudden jerk, and your line comes back to you *minus* the hook, perhaps the float as well. It's no use, however, 'crying over spilt milk,' and I will tell you how to avert the disaster in future. In such a place as this when the float gets to the end of the swim, the hook, being lightly weighted rises with the current, and the grayling, coming from below, snatches at it, and snaps the fine drawn gut with the sudden jerk. Never, therefore, keep your finger on the line, also take the precaution before withdrawing to give a gentle strike, in which case should a fish have taken your bait without giving any indication through the medium of your float, you generally succeed in landing.

The artificial grasshopper so called, fig. 1, is merely a rough imitation of the common green caterpillar, dressed over a small piece of lead to carry the bait rapidly to the bottom; a couple of gentles or so being stuck on to the point of the hook. No float, properly so called, is used, but only a miniature substitute intended to rise and sink with the line, but at the same time to give the fisherman an idea of the depth and position of his bait. B, in the woodcut, fig. 2, represents the sheath or 'cap' of quill, into which slips a fine piece of solid quilstem,

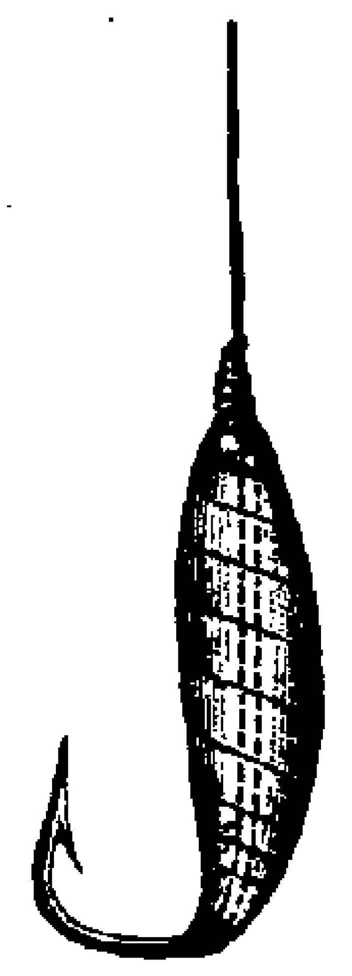


FIG. 1.—ARTIFICIAL GRASSHOPPER.

FIG. 2.—GRAYLING 'FLOAT.'

A A, cut of a thickness to fit it accurately. The line of course passes between A and B, and is shifted according to the average depth to be fished.

The 'grasshopper' is worked simply by a 'sink and draw' motion—allowed, that is, to go down to the bottom, and then drawn up again about a foot or so as before. The stream is usually strong enough to shift the bait as much as is desirable; but if the water be too still for this, the result can be arrived at by 'drawing' the bait a little to the right or left with the rod, as I have pointed out in the 'Modern Practical Angler.'

The great point is to be quite sure that the bait does touch the bottom before drawing up.

A run will of course be perceived as the bait is being drawn up, when a smart stroke should be given, and the fish held tightly. Otherwise from its non-fighting propensities, a large grayling is very likely to get off; the hook also is a good deal encumbered with gentles. When first struck, the larger grayling appear to me to fight as an eel fights—pulling tail backwards, instead of running down or away, head first, as other fish generally do ; and I hardly ever remember seeing a hooked grayling spring out of water.

The best spots for grasshopper fishing have already been described. Where the water is deep enough, a short line worked almost perpendicularly near the bank will be found most successful : but by throwing out a considerable distance, excellent water otherwise inaccessible can often be reached. The cast may be made over-hand like a fly to a distance of some ten yards, but care must be taken to allow the line to spread well behind, or otherwise the bait will perform various eccentric flights into the bank or bushes. A longish light rod, say fourteen or fifteen feet, is most convenient for grasshopper fishing ; and a very fine running line.

As a rule, fish caught with the grasshopper are twice as large as those caught with the fly. September, October, November and December are the best months, and the best days are usually quiet warm days succeeding frosty nights—in fact, grasshopper fishing never fairly gets into play until the first sharpish frost. From about 8 A.M. until 4 P.M. is commonly the best time of day.

The proportions of a Teme grayling of about one and a half pounds which I measured were :—total length of the head, body, and tail-fin being considered as five and a half, the length of the head alone as one. Depth of body slightly greater than length of head ; tail forked. As in all members of the salmon family, the grayling has two back fins, the second adipose or fatty. Number of scales in lateral line about eighty-seven.

[From the catching of fish to their cultivation is a natural, though perhaps inverted, transition. Indeed, no book on angling could nowadays be considered complete which ignored the latter subject. Let us, therefore, transfer the scene from the well-stocked 'salmon river' or trout stream, with its triumphs and discomfitures, to the nursery-ponds at Guilford where so large a proportion of the principal performers were very likely born and bred.

Every year the problem of restocking and replenishing our 'fished-out' waters is becoming more pressing, and unless pisciculturists had come to the rescue the question for anglers and fishing proprietors would soon have been not 'How shall we catch fish?' but 'How shall we get fish to catch?' . . . Mr. Thomas Andrews' probably unequalled practical experience gives an importance and value to his opinions on fish-culture which will be appreciated by all who take a scientific, 'sporting,' or commercial interest in the subject.—H. C.-P.]

SALMON AND TROUT CULTURE

THE attention of Pisciculturists is at present almost wholly devoted to the propagation of the salmonidæ, and justly so, as this family of fresh-water fish is not only by far the most valuable in the market, but is, *par excellence*, the greatest favourite among sportsmen in all countries where it exists. It has unfortunately the peculiarity of yielding fewer eggs than any other fresh-water fish, and consequently with the increasing demand artificial breeding has become a necessity, unless the race is to be allowed to dwindle, if not die out.

The following table of the number of eggs produced by several of the most familiar fresh-water fish is instructive :

Salmonidæ	about	1,000	to the pound
Pike	"	10,000	"
Perch	"	40,000	"
Roach	"	640,000	"

It is with salmonidæ that the most excellent results have been attained by artificial breeding : yet it appears that in America, notwithstanding the enormous numbers of Salmo Salar (Salmon proper) that have been hatched and turned into the rivers of late years, expectations have not been realised in many instances. In the case of the migratory species we have to contend with ocean depths and innumerable enemies beyond our reach, which may possibly account for

heavy losses. The process of hatching and rearing young S. Salar is precisely the same as in the case of non-migratory varieties, only we keep these latter nearer home as it were, and consequently can protect them more effectually.

The proof of the great value of salmon and trout waters is the eagerness with which anything like a 'good stretch' is taken up. To say nothing of the rental per annum of 500 yards of salmon river which recoups itself to a great extent by the sale of fish for the market, a very large sum is ungrudgingly paid for a decent piece of trout-fishing, or a rod on Club waters.

Many of our streams and ponds are capable, with judicious management, of holding far more fish than they now do, but the water must be carefully protected, and the stock of fish kept up by breeding artificially. There are many Angling Societies and proprietors of private fisheries who make a point of replenishing their stock every year by purchasing from pisci-cultural establishments, or by carrying on artificial breeding on their own account. Most fishing-clubs, however, are at a dis-advantage in not being able to provide suitable rearing places for their young fish, and they have to turn the 'Fry' that they purchase or breed direct into the rivers, which already contain trout, the probable consequence being that 99 out of every 100 go down the throats of the larger fish! Professional trout breeders have, of course, their rearing ponds from which they supply yearling fish, and although these are much more expen-sive than fry, there is at least the satisfaction of knowing that almost every fish will attain to a killable size if protected. It is far more economical for Angling Societies and Fishing Clubs to purchase yearling fish than to erect hatching establishments of their own, as there is not only the original outlay, with interest thereon, to be considered, but also a weekly expense in wages to one or more persons all through the hatching season, with in many cases a very unsatisfactory show of fish. A few hundred yearling fish would cost far less, and make a much better 'show' in the water.

THE HATCHERY.

Livingston Stone, in his excellent work, 'Domesticated Trout,' observes 'that the time has come when trout can be hatched, reared, and brought to maturity in great numbers, and with comparatively little loss. . . . The peculiar nature of the things you deal with, however, namely, fish and running water—and the magnitude of the numbers you operate with, are such that there is hardly an occupation in the world where a want of security is followed by such wholesale loss.'

The word 'security' in trout raising implies a great deal more than most people imagine. It means not only that all joints and screens in the hatchery and in the ponds are perfect, but that the supply of water must be 'secure' against falling short, secure against violent and excessive flushings, against becoming fouled, heated, or frozen; and all this requires an amount of foresight and tenacity of purpose, constant vigilance and caution, that very few men will undertake to exercise and persevere in throughout the whole season, and year after year; but this makes all the difference between successful and unsuccessful trout-breeding.

Security does not cease to be a *sine quâ non* as soon as the hatching season is over; during the whole of a trout's lifetime it has to be protected from innumerable enemies, and secured in many ways, to be of any ultimate value to the original owner.

In the limited space at my disposal I cannot, of course, enter into every little detail, and explain all the different sources of danger incidental to trout-breeding. A volume could easily be filled in treating of every separate stage in the life of a fish; therefore a good deal of condensation is unavoidable.

Assuming, then, that the supply of water for hatching purposes is of a suitable temperature, ample, fairly pure, and free from much sediment, it now remains to consider the

hatching apparatus itself. Storage tanks or reservoirs will still be necessary in most cases, as the water should not be taken from a very great pressure. Fish are as frequently killed by water that is too highly charged with air as from a scarcity of water.

It is perfectly possible to hatch a limited number of eggs in a few oyster shells, a soup plate, or a frying-pan—I was almost saying an old hat—by which I would convey that the material of which hatching troughs are constructed is not of so much importance as the *treatment* of the ova placed in them. The most important thing is the water-supply; if this deposits much sediment, filters must be used.

There are different opinions as to the structure of hatching troughs. Whilst some prefer the 'glass grille' system, others find slate or metal troughs, wire gauze, or perforated zinc trays answer equally well. The glass grille system appears to me extravagant only as far as space is concerned. Lord Lauderdale says that in his water this system produces stronger fish. The first cost of the glass is certainly greater, but it entails no annual expense, and has the advantage of being an almost perfect non-conductor of heat or electricity, the latter being an important factor in hatching, and as yet insufficiently studied. With the water I employ, perfectly healthy young fish are produced by the other methods.

The 'slate trough' plan also loses much space, as it is not advisable to place the ova in more than one *layer* during the period of incubation.

The perforated tray system, with the 'underflow' supply, will bring on very many more eggs in the same area. To make a comparison—upon a superficial area of one inch, twenty to twenty-five ordinary sized trout ova will lie; therefore to hatch, say ten millions of eggs on grilles, or on the bottom of troughs, an area of over 300 square yards is required (in reality 500 square yards would be necessary). In the perforated tray system, eggs may safely be placed ten or fifteen deep; the space required to bring on ten millions of ova by this method would thus be but a tenth or a fifteenth part; but as there is

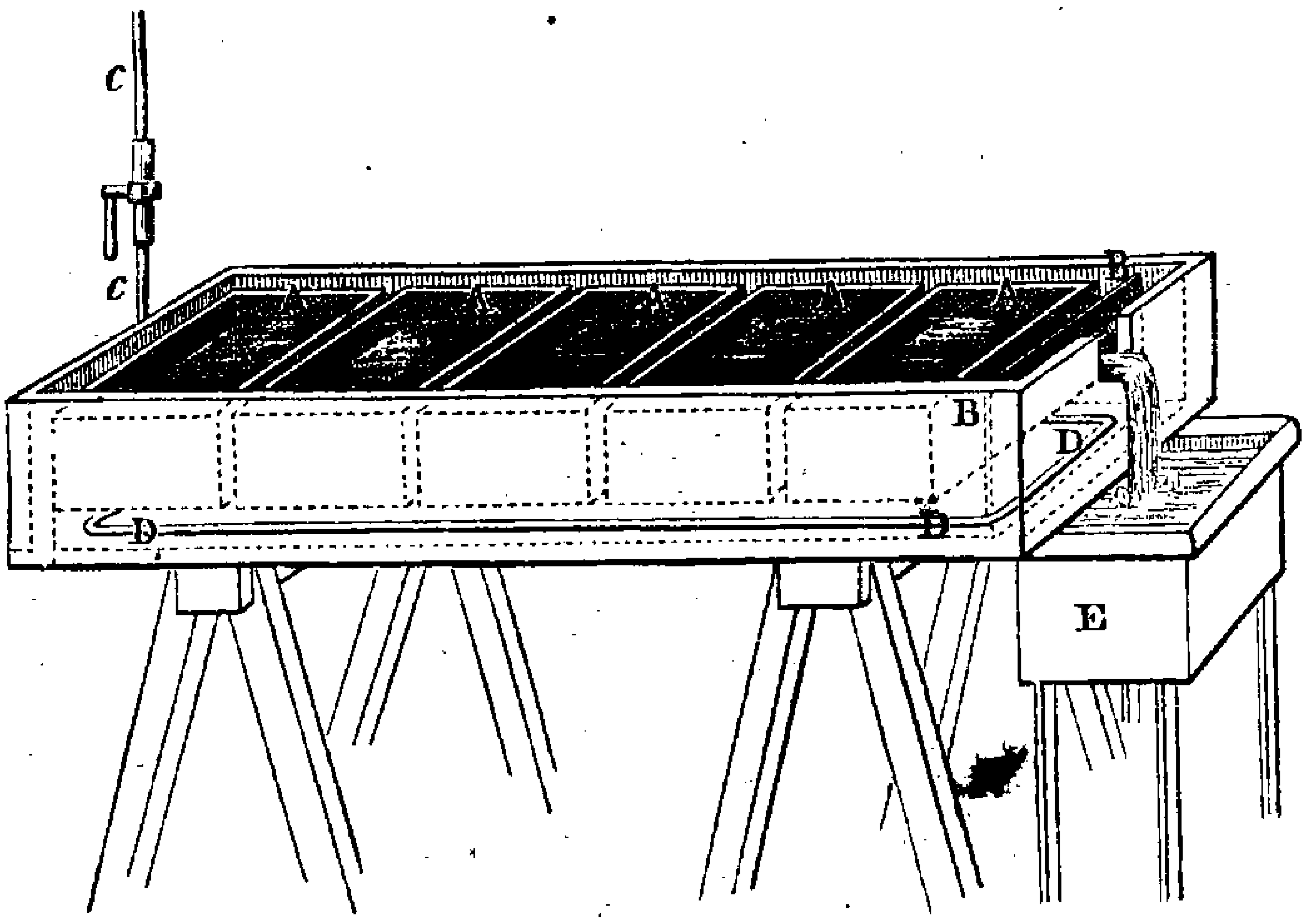
sometimes an interval of as much as three months between the first and last ova obtained, a second crop is laid down, and the boxes or troughs are used over again.

The troughs now in general use in my hatchery are made of wood. They are three feet long, by one foot wide, and six inches deep, and supplied with water through a punctured pipe running all round the trough. They are fitted with movable perforated zinc trays twelve inches (bare) by six inches wide and three inches deep. This plan, although not entirely a novelty, appears to have suggested itself some years ago both to myself and to Mr. Oldham Chambers, whose practical experience in fish culture generally is well known. It seems to have originated in my very old plan of using perforated zinc trays, into which were counted the 'Fry' previous to sending away. The ova it was imagined were placed in these trays, which were put on the bottom of the overflow trough, but of course the eggs perished as the water did not circulate. It was then thought that such trays would answer for hatching ova if raised from the bottom of the trough, and the water made to circulate by an upward current. This plan, though not claimed as an invention, can hardly be called a modification of any other, although it bears some resemblance to several which have been used in America. It has certainly found favour among pisciculturists on account of its great economy in the items of prime cost and of space. One of these troughs costs about 55*s.* complete, and will bring on over 100,000 eggs, whilst a set of six slate troughs costs between 8*l.* and 9*l.* and will not contain more than half the number of ova. The trays may be much larger, but I prefer this size on account of their handiness and comparatively slight weight. Instead of 'carbonising' the wooden troughs, I have them coated, as well as the zinc trays, with tar varnish. Silicate paint answers as well.

Livingston Stone, in the book before referred to, says, 'One form or the other of the tray system is undoubtedly destined to entirely supersede the old methods of hatching on glass grilles or on the bottom of troughs.'

Economy in space, where operations are conducted on a large scale, is unquestionably a great advantage : but it is not only in space that the saving is effected : there is a saving also in the cost of building and fitting up the hatching-house, as well as in the quantity of water required—the last an important item of expenditure in many hatcheries.

Whatever be the fashion or materials of the hatching



SKETCH OF WOODEN HATCHING TROUGH.

3 feet long by 12 inches wide and 5 inches deep.

troughs, they should be placed in a good light, and arranged so that they can be easily manipulated for removing the fish and cleansing. Some hatching troughs are placed in out-of-the-way dark corners, where there is no possibility of seeing what is going on, and a great deal of mischief is done before the cause is found out. The cut represents the hatching troughs in my hatchery.

As before stated, the whole of the inside of the troughs and the perforated trays should be coated with tar varnish or paint,

or the wood-work only may be 'charred.' Varnish or paint, however, preserves the zinc, and prevents oxidation. The punctured pipe must be raised a quarter of an inch from the bottom, by means of little feet soldered on, as in case any fish escape from the trays in manipulation, they would be killed by attempting to get under the pipe if it is laid on the bottom. It is often necessary to *thin out* the young fish, and the bottom of the troughs thus gives a large amount of extra space, and the fish can be drawn off by the waste pipe when required.

One looks back with much interest to the time when these experimental operations were commenced. How well I remember my first day's trout spawning; how careful I was that the can containing the freshly taken ova should not be shaken on the journey of three miles home: the least jostling or swinging of the can sent a feeling of horror through me; and what an excited state of uncertainty I was in for the first few weeks, wondering whether with all the clumsiness in taking the eggs, any of them would 'hatch out.' I have since learned that freshly taken ova can be sent long distances by rail without danger, and I prefer to send them in water rather than moss, as they can be transferred to the hatching troughs more quickly, and with less risk of concussion. The ova will not bear the same amount of shaking and disturbance forty-eight hours afterwards, but they may be examined with a glass tube, and carefully replaced in the troughs without injury, from the day of taking: anything approaching concussion, however, kills them, until the tissues of the fish are firm and their eyes are visible.

THE COLLECTION OF OVA.

When everything in the hatching-house has been tested, and ascertained to be thoroughly sound and in order, the ova is to be procured. 'First catch your hare,' is applicable here. I remember in former years the great uncertainty and risk there

was in depending on rivers for the stock of ova. Some of the best parts of the Test, Itchin, Wey and Kennett were at my disposal; but seasons vary in our fickle climate, and I have found more than once that the fish had already spawned, and gone down to the deeper water, or that they would not be ready for a week or more. This meant, perhaps, no eggs at all from that river, or another journey. Then, if a second attempt was made, heavy rain has often done mischief, and nets would not work the river. Trout will sometimes defy the best net in the world, as, in close proximity to the spawning ground there is frequently 'a sweet little hiding place,' seven to ten feet deep, running far under the bank, and full of stumps and roots, into which the fish instantly fly; get them out if you can! The execution of the strategical movement is doubtless sagacious as well as instinctive on the part of the fish, but it shows a disinclination to a closer acquaintance which is not satisfactory to the would-be operator, who returns home egg-less, and not unfrequently wet to the skin.

My plan has been to secure, by lease or purchase, ponds already in existence, and to construct others, where I may with certainty rely on finding breeding fish when they are wanted. If a few of the female fish are not ripe on the first visit, they are removed to a smaller pond for a few days: by these means I get all the eggs which my fish produce. The ponds are netted, and when necessary drawn off. If care is taken no fish need be lost or killed by running ponds off, and it is a good plan to draw the water off occasionally, in order to get rid of any loose mud which may have accumulated. A 'goodly sprinkle' of eggs has been obtained from the before-mentioned rivers almost every season, and the quality of Test, Itchin, Wey, and Kennett trout is so well known that it is needless to say anything here in their praise.

I believe, however, that the future quality of the fish depends rather on the food they get, than on the water from which their parents come. The character of a trout alters very much under changed conditions. Still it is advisable

to get ova from good 'strains' of fish, and from large, healthy breeders. If they come from a degenerate breed it is not probable that the offspring will be healthy, nor grow to any great size. Trout brought from Scotch burns, or little Welsh and Devonshire streams will often grow to a large size in more suitable water, although they would never have got beyond half-a-pound at the most in their native stream. There is a decided advantage in having large ova, for the simple reason that the fish hatched from them are bigger, and able to take much larger morsels of food; they thus get a good start of their smaller brethren, and, as a rule, keep it. I have found that the largest and best eggs are produced by fish from three to five years old. The size of trout ova varies very much, as the following comparative table will show.

Sample No.	1 S. Fario . .	measures	·20 inch or $\frac{3}{16}$ nearly
"	2 S. Fontinalis .	"	·23 inch or $\frac{7}{32}$ nearly
"	3 S. Levenensis	"	·24 inch or $\frac{1}{4}$ nearly
"	4 S. Fario . .	"	·26 inch or $\frac{1}{4}$ full
"	5 S. Ferox .	"	·26 inch or $\frac{1}{4}$ full
"	6 S. Fario . .	"	·30 inch or $\frac{5}{16}$ nearly

These measurements are the largest diameters, the eggs not being perfectly round.

Where fish culture is practised on a large scale, hundreds of thousands, or even millions of eggs are required. At several of my ponds I can safely reckon on 100,000 to 400,000 in a day's spawning. I am under obligation also to several friends, who allow me to take what ova I can get from their water, and I endeavour to make them some return by sending them fry or yearling fish.

IMPREGNATION OF THE OVA.

The first principle of modern pisciculture is the fecundation of the ova by artificial means. 'In consequence,' observes Livingston Stone, 'of the discovery that all mature eggs are

impregnated by coming in contact with ripe milt, the fish, both male and female, being taken at random, we are compelled to admit, however unwillingly, that the origin of fish life, in artificial impregnation at least, is wholly a mechanical affair.'

Unless, however, a very large percentage of fertilised ova is shown, and unless these are taken from strong, healthy parent fish, the pisciculturist's labours are incessant and irksome, as he will have to be constantly removing 'blind' or unimpregnated eggs, and weakly 'fry;' whereas, if his breeders are healthy, and his eggs properly taken, he may reasonably reckon on a large proportion of strong, healthy fry, which will in due course, and with proper treatment, develope into valuable yearling fish.

The discovery of the 'dry method' of impregnation, by M. Vrasski, a Russian, about the year 1856, is of the greatest practical importance. It was not, however, until some years after, that it became generally known in America, and still later in this country.

Stone (p. 105) says: 'No one hereafter, who has heard of the new method, will ever take the eggs of any cold water fish by the old method. Seth Green reached the same results nearly ten years before, by using a *very* small amount of water in the impregnating pan;' and Frank Buckland ('Familiar History of British Fishes,' p. 303) found that by placing milt in water first, and then adding the eggs, he obtained better results. In this case, I presume that the eggs were added within a *few seconds* after the milt had been placed in water.

By the 'dry method,' nearly one hundred per cent. of the ova taken can be fertilised; whilst by the old plan of placing both the ova and milt in water, the average scarcely ever reached higher than fifty or sixty per cent. There was always risk, by the old method, that the absorbing power of the egg had ceased before the milt was added, or that the vitality of the milt had disappeared when several minutes elapsed before

the two were brought into contact.[1] It is well known now that the ova will retain the power of absorption of the milt for a considerable time, if *water* has not already entered the 'micropyle;' but if water enters first, the spermatozoa does not take effect. It is also known that 'milt' will not live long in water—two minutes being the supposed limit. 'Paradoxical as it appears, water drowns them' (Stone, p. 107). It is stated that the 'Spermatozoa of the milt remains alive *several days* when kept from the air and water,' consequently crosses of breed can be effected which should lead to valuable results. The introduction of 'fresh blood' by these means would be very simple, and of the greatest advantage to waters where the fish have become degenerated; it would, however, take at least five or six years for the improvement to be seen, but the time might be shortened by the introduction of yearling fish from other waters.

Both the eggs and the milt are now put into a spawning pan with *no water* save that which falls from the body of the fish in the process of taking the eggs, and the results are in the highest degree satisfactory. Water is of course added after a few minutes, and the usual rinsing is necessary. I have frequently had samples of eggs in which 100 per cent. have been impregnated, and many other pisciculturists have similar experiences. A table is given in Stone's book (p. 104) of thirteen samples of eggs, amounting in all to 72,300, in which 96 per cent. were impregnated, and on the next page he very naturally considers the difference in the labour which this makes, calculating that in a million ova it would take about thirty-five whole days to pick out, one by one, the worthless 40 per cent. which are found by taking the eggs on the old system. The bad eggs *must* be removed sooner or later, and it will be immediately seen that the work of a pisciculturist is very much lessened when he has 95 per cent. of good eggs, and but 5 per cent. remain to be picked out.

[1] On the day the above was penned the writer operated on 350 fish in two hours; this, without allowing for pauses, gives twenty seconds for each fish, and is tolerably quick work.

TREATMENT OF THE OVA.

As soon as impregnation takes place, the micropyle closes, and water cannot enter except through violent concussion. When the 'germ' has risen, and 'segmentation' begins, the ova should be disturbed as little as possible. After this, if the hatchery is well regulated, nothing short of violence or absolute neglect can prevent the regular progress of nature, and the eggs will, in due time, hatch.

The period of 'incubation,' as it is sometimes called, extends over fifty to seventy days in water of 46° to 50° Fahrenheit, and during this period the pisciculturist's labours are not very excessive, provided he has everything in first rate order, and a good percentage of fertilised eggs. The time occupied in picking out white (that is dead) ova, and any foreign substance which may appear, is inconsiderable, and it is not necessary that this should be done every day; three or four times a week is often enough, unless the temperature rises, in which case 'fungus' and 'byssus' grow more rapidly.

A number of good eggs are sometimes spoilt by the incessant disturbance caused in hunting after a few bad ones, and awkwardness in removing them. Personally I allow no one to touch my ova until they have been in the water twenty days, undertaking all the picking over myself during that time. A few minutes at the different troughs is all that is required.

If ova are sent to the Antipodes, they should be packed and placed on board ship as soon as possible after they are taken from the parent fish. The voyage is too long if packing is delayed until the eyes appear; and as the temperature in Australia and New Zealand is at its highest in December and January, it is advisable to send eggs of late spawners, so that they arrive there at a cooler season, viz. April or May.

The first consignments of ova which arrived in New Zealand were probably those packed by Mr. Youl and Frank Buckland in 1864 and 1873, and were collected from the

head waters of the River Wey, at Alton. These fish run up to eight and ten pounds and occasionally even larger, and are perhaps amongst the finest class of trout to be found in the country. With the refrigerator plan now general in steamships, there is no necessity for carrying ice, as it is manufactured on the voyage; but I am not so sanguine of success if the packages are placed in the refrigerating-room, as should the temperature remain too low for any length of time the eggs would perish. If the packages are placed in a cool chamber, and covered with ice sufficient to last the whole voyage, the process of incubation can be sufficiently retarded to prevent the ova hatching out. The 'snow' which accumulates in the shafts of the machinery during the voyage might be utilised by arrangement with the person in charge of the refrigerator: there should be an arrangement for carrying off the melted ice or snow, or probably it would become a source of danger by flooding the packages.[1]

In about forty days from the time the eggs were taken, the embryo is distinctly visible through the outer shell, and the ova can be handled almost with impunity. This is the time to send them any distance not exceeding fifteen or twenty days' journey. It is also the best time for the fish-breeder to ascertain what is his percentage of fertilised eggs, as disturbance is no longer injurious. The whole tray full may be removed to a pan, and thoroughly washed, with the effect of setting any unimpregnated eggs turning opaque white in a few minutes, and leaving the good eggs perfectly clean and free from sediment.

Unimpregnated ova will sometimes remain unchanged in colour for many weeks, but a disturbance such as that just suggested will usually find out the worthless ones; at all events, the smallest examination will show that in the good ova the eyes are strongly developed, and the bad ones have but a small

[1] This, and the small number of impregnated eggs, appear to have been the cause of failure in the last attempt in January 1884. The writer is on the point of packing some ova for Australia, and will endeavour to profit by past experience. Whether there is any water suitable in Australia, is another matter altogether.

annular disk at the top. These should now be removed, as they never develope, and occupy room required for others which in a short time will.

I have heard of ova having been ninety days in the water without showing the eyes, and without turning white; of course the tyro was wasting his time, hoping against hope, and at last had to throw all the eggs away. If ova, after being fifty days in water of exceedingly low temperature, do not show, even to a novice, unmistakable signs of becoming young fish, *they never will*, and may be got rid of at once; they will make a meal for some large fish which may be handy to the hatchery.

The eggs can now be packed in moss, and sent long distances. During the last few years eggs have been conveyed across the Atlantic, with the very smallest loss. My last consignments of S. Fontinalis from America have arrived in first rate condition, not more than five per cent. being spoilt, and these evidently had been bruised in packing.

The plan of packing does not vary much with trout-breeders. The eggs are placed in alternate layers between moss, and protected with a covering of mosquito netting, muslin, swan's down calico, or butter-cloth, so arranged that the eggs shall not be crushed or escape. These layers are first placed in boxes about a foot square, and afterwards in an outer wooden case, well surrounded with saw-dust and placed in the ice-house of the ship. Previously to the last condition, boxes of ova were probably put among the general cargo, and there was risk of their becoming heated on the voyage. For many years it was a matter of the greatest uncertainty whether the ova of S. Fontinalis (American) would reach England in good condition. Many hundreds of pounds sterling have been wasted in this way, I myself having received several packages of 30,000, 50,000, and 75,000 in a perfectly putrid state; but being convinced that the loss arose from heating on board ship, I took some little pains in making arrangements with the shipping companies, who readily agreed to do anything in their power to facilitate the transport. The 'Inman' and 'Cunard' com-

panies have been most obliging in allowing certain other privileges which have gone far to insure successful transport, and from that time the ova which I have received from America, as well as those which I have exported, have arrived in excellent condition.

There are three causes of failure in exporting ova, viz. imperfect fecundation, bad packing, and heating on the voyage.

The distribution of ova within the limits of Great Britain and Ireland, or indeed all over Europe, is a very simple matter, and is done on a large scale by leading pisciculturists. For a journey of several days it is sometimes necessary to place some rough ice in the package to keep the temperature down. If they are to be many days on the journey, they should be sent off as soon as the outline of the fish and the eyes are distinctly visible; this leaves a margin of fifteen to twenty days, according to the temperature of the water into which they are afterwards placed, before the hatching period arrives.

When the eggs are all 'eyed,' the pisciculturist has but to remove any sediment settling on the ova, and to pick out occasionally a dead one. In the best water available for hatching purposes, there is always a *slight* sediment after it has run through the troughs five or six weeks, but this can be got rid of by removing the ova from the troughs, and washing them—in the tray system, by lifting the trays up an inch or two, say half-a-dozen times, and replacing them, or in the glass grille system, by sprinkling clean water over the eggs from a watering-pot. A hatching-house should be fitted with a 'sink' five or six feet long, where any washing can be done.

Nature will now do the rest of the work in good time, and with very little help on our part. The greatest assistance we offer nature is in the protection of the ova and newly-hatched fish from every natural enemy during the most helpless part of its existence; the only part of fish-hatching which is purely artificial is the taking of the eggs from the parent fish.

As soon as the great 'hatch' comes on, there is more work for the pisciculturist in removing the empty egg-shells from the

hatching troughs, as the little fences which are effectual to keep the young fish in the troughs will also prevent the empty shells from floating away; but this is the work of a few minutes only every day. Either the whole tray full of hatching fish may be turned out into a pan, and the empty shells poured off, or the greater part of the shells can be skimmed off with a cup or small muslin net; whichever plan is adopted, it should be repeated until all the fish are hatched, and the troughs are perfectly clean. A few fish may have to be assisted out of their shells by the use of a camel's hair pencil, as they sometimes hatch out *tail* instead of *head* first, and the struggles of the young fish to get free sometimes end in their being strangled.

A small percentage of the fish always die in hatching, and must be speedily removed. Deformities and monstrosities are occasionally met with; some have two heads and one body (Salmonese Twins !); others have one head and a body and a half; a few also are hatched with three heads; a few with four eyes, and some with no eyes at all.[1] These are placed in a spare corner for observation, or preserved in spirits—they never live more than five or six weeks.

There will soon be left a wriggling mass of veritable young trout, huddling together into every corner of the trough out of the light. There is no danger in this, unless the troughs are *over-crowded* with fish. In this case comes 'gill fever,' or inflammation of the gills, a plague with which I am happy to say I have never been troubled. The effect of inflammation of the gills is to eat away a portion of the gill coverings, and if the fish survive, there is always trace of it to be seen in after-life,—nor do they ever thrive or have so good an appearance.

A pisciculturist having anything like a demand for his ova will, ere this, be able to *thin out* his stock considerably by finding unoccupied troughs; at this time also the perforated tray system seems to offer the greatest advantages, as the fish can be prevented from over-crowding by being kept in separate

[1] Two specimens, with threeheads, have been found in the writer's hatchery during the last eighteen years—curiously enough these were both 'Americans.'

compartments of the same trough, and counted out in batches of one or more thousands, ready to send away at the right time, and at a moment's notice.

Nature has provided the young fish with the 'umbilical sac,' which supports them for about six weeks: this gradually becomes smaller, until it is finally absorbed into the system.

The newly-hatched fish is a perfect marvel of construction, and can be seen to perfection in a drop of water under a microscope at a low power. Every organ is shown distinctly; the colouring of the skin and the circulation of the blood through the whole system is plainly visible. Buckland writes, 'The foot of a frog is pretty enough, but is no more to be compared to the young fish than a schoolboy's daub to one of Sir Edwin Landseer's pictures.'

REARING OF THE FRY.

While the young fish are in the 'Alevin' stage, there is but little to be done in the hatchery; almost all that is necessary is to keep the water constantly running in a slightly larger volume and to remove the few fish which may die. During this period I prepare for sending them away by removing them to a large shallow tank capable of containing fifty or sixty perforated zinc trays, each holding a thousand or two. Overcrowding is thus avoided, and the fish are at hand at a moment's notice. In about six weeks after hatching, the umbilical sac is completely absorbed, and the young fish require food.

L. Stone says concerning the rearing of Fry, 'Here, the triumphant skill which hatched the eggs successfully was baffled, and it seemed for a time as if the wonderful art which had promised so much was to come to a stand-still at this gulf between the eggs and the yearling trout, a gulf which seemed as if it could not be bridged. . . . The question is not now, "Can young trout be raised?" but "How many can do it, and under what circumstances can it be done successfully?"'

Feeding artificially in 'rearing boxes' is, in my opinion, an

expensive and unsatisfactory plan compared to the natural food system, and the time comes when the fish *must* be removed to more roomy quarters. Some pisciculturists, however, prefer to keep the young fish for a few weeks in the hatching or rearing boxes, believing that it gives them a better start in life. I do not agree with them, as I maintain that the small loss which *may* occur by turning the fish out in the open at once is more than compensated by the quicker growth they make on more natural and nourishing food.

Young fish will not, as a rule, take artificial (i.e. dead or manufactured) food after it has fallen to the bottom of the boxes: and there is soon an accumulation of decomposing matter, which is very injurious, and troublesome to remove without damaging the fry. Again, the water which is suitable for hatching purposes, on account of its purity and low temperature, is not suitable for rearing. It lacks the very qualities so essential to the future development of the fish. The hatching water is exactly that which is wanted to bring the fry *up to feeding point*; but from this time there is nothing in its composition to nourish young feeding fish, being altogether too *barren* so soon after coming from the springs and almost wholly excluded from light.

But it is not in every locality that the natural food can be found in sufficient quantities to 'keep the fish alive and growing,' and to bring them on to maturity; therefore artificial feeding is in some cases compulsory. If the fry can be carried through the first three months, many of the dangers to which they are subject cease. They can take larger food, and a greater variety; but the difficulty is to provide suitable food and lodging to rear them even to this age.

My plan is first to select water *which possesses the requisite properties for breeding the natural food*, and on it to construct nursery ponds of a convenient size: 'The great thing to encourage in your fishery is food which is reproductive.' This remark applies to trout water, and has special reference to the food in streams; but the fact of making a small stream into ponds does not alter the character of the water (except in most

cases to improve it), and if a number of ponds are constructed on different levels, these will preserve the food, if the volume of water passing through is sufficient, and yet at all times under perfect control. The raising of trout appears to be entirely a question of food, both in quality, size, and quantity; and unless this can be provided naturally, the rearing of any great number of fish is a most expensive undertaking, various kinds of meat or offal having to be procured, and a staff of assistants constantly employed in chopping or otherwise preparing the food. The system of feeding at the Howietown Fishery is almost wholly artificial, especially for the large fish, and this establishment (by far the largest in the world) turns out great numbers of yearling fish. There is but little natural food to be found in the water, but this has lately been introduced, and watercress cultivated in all the ponds. A pisciculturist, however, relying entirely on natural food must have larger ponds and more of them, involving a considerable original outlay. Without proper food, natural or artificial, the loss would be something difficult to realise—perhaps equal to that arising in the natural state, where it is thought to be probably not less than 999 per 1000!

If a small proportion of the young fry—turned direct into the ponds from the hatchery—die, they are devoured by fresh-water shrimps and other carnivorous insects, valuable in themselves as fishes' food, and also acting as Nature's scavengers of the water; but if proof is required that these do very little damage to healthy fry, the writer may mention that he has frequently found 80 and 85 per cent. of yearlings, which were placed in the ponds eleven months before as fry. Let anyone observe, however, the rapidity with which a dozen shrimps will demolish a *dead* 'fry.' They will cluster all round it, and in a very few moments there will be nothing left but his little back-bone—the fish get the best of it in the long run though!

Seth Green, a well known American pisciculturist, says 'Starvation' is almost the only cause of mortality among fry provided they have been properly treated in the earlier stages. How many millions of fish have been deliberately (in some

cases unavoidably) *killed* by 'starvation' either before or after turning out, it would be impossible to calculate !

My own fish are sent off to the 'Nurseries' on the first signs of their requiring food, which they show by rising from the bottom of the hatching trays into about mid-water, balancing themselves there, with heads against the current, and turning at any small particle they see passing. It appears as if the first good meal a young trout gets may be compared to the 'Nest-egg' which a man is advised to put by—it is often the making of him !

Unlike most other very young animals, they seem suddenly to acquire the movements and habits of old fish, and to pass from the helpless 'alevin' stage into maturity in all except bulk.

Some interesting experiments have been tried in my garden, where there are several tanks twelve feet by six feet and seven inches deep. Last spring a few (150) grayling and trout fry were put into one of these tanks at the 'feeding stage.' The tanks are supplied with the hatchery water, *but exposed to light and air*; every third or fourth day a can of weed, swarming with the larvæ of small water-flies, was sent up from the neighbouring nurseries, and up to the time of writing, when they are on an average four inches long, there has been scarcely any loss. The temperature of the water was eight degrees lower than that of the nurseries, and the larvæ did not live longer than four or five days ; so that fresh supplies had to be procured, but the fish have never had an atom of any other food.

The larvæ of water-flies and the mature flies themselves, as well as the *Gammari* (fresh-water shrimp) and *Limnæ* (snails), may be transferred to other waters of about the same temperature without difficulty; and if a large quantity is introduced into suitable waters where there are no fish, sufficient food to rear a great many fry will soon accumulate by reproduction. Watercress is one of the best plants for trout ponds or streams; watercress growers lime their beds to destroy insect life.

NATURAL FOOD.

The one great difference between my treatment of young fish and the plan adopted by some other pisciculturists lies in 'Feeding.' It must not be supposed that my fish are turned out into the ponds without any thought of how much food they may get; on the contrary, it is by the most rigid preservation of the natural food that I am able to grow yearlings to the size and number I usually do. Every little water-course on my grounds is utilised as a means of producing large quantities of natural food, and any one who knows the immensely prolific nature of aquatic insects, will soon understand that I have no difficulty in providing sufficient food for the fish in all stages. Two or more ponds of a 'sequence' are set apart for the reproduction of food only, and as these are properly situated a great quantity can be sent down to the nursery ponds as often as necessary.

Stone (p. 225) says, 'Trout's food, when wild, consists chiefly of water-insects, smaller fish, larvæ, fish eggs, crustacea, and the flies and insects which fall from the air into the water; all of them together forming an astonishingly extensive variety. The quality of their food affects the growth and appearance of trout, and it is even thought that the difference in the colour of their meat is sometimes caused by certain kinds of feed; the fresh-water gammari, or pulex, being supposed especially favourable to the production of red-meated trout.' At p. 289 of F. Buckland's 'British Fishes,' he says, 'Some trout are white-fleshed, and some are pink-fleshed; some say it is dependent on the food, but I think this cannot be the entire cause, for I have caught both pink and white in the same net, and both living exactly under the same circumstances. One theory of the cause of the flesh being red has lately been told me by the Duke of Argyll, who believes that red-fleshed trout have been feeding on the fresh-water shrimp, and that the horn-like coats of this little animal turn red in the stomach through the action of the gastric juices. Lord Dorchester also writes that "his best

fish when first taken throw up a species of fresh-water shrimp." Again, "where these gammari are most plentiful the trout are nearly always the largest, and of the best colour and condition."'[1]

It appears to me that there must be some colouring-matter in the 'shrimp' itself, as they turn red, or rather, a deep orange colour, when dead, not having been in a fish's stomach. Trout, although apparently living under the same circumstances, feed very differently, and some may prefer one kind of food to another, doubtless caring very little whether his flesh is pink or white when his turn comes to be put on the table! F. Buckland, in his manual of Trout culture, advises the destruction of the 'shrimp' as 'vermin.' From this dictum I must beg to differ entirely, maintaining on the contrary that the fresh-water shrimp is the *finest natural food* to be found in the water. Doubtless they *do* destroy a few of the ova deposited naturally in the ponds or rivers, but not anything like the quantity which the parent fish and the later spawning fish devour, or spoil by the frequent disturbance of the spawning grounds: moreover, a pisciculturist takes care that his fish do not spawn in the ordinary pond or nursery. Even in waters which are not annually replenished by artificial breeding, the damage caused by shrimps cannot be compared with the great gain in respect of food by its preservation.[2]

A pisciculturist protects the ova by bringing them to the hatching house, where no shrimps or other 'vermin' can possibly come.

The eggs of the 'gammari' are exceedingly small, almost microscopic, and when hatched are exactly the proper sized mouthful for the fry, as also are the small Limnæ, whose shell is so delicate, that it is easily digested by young fish.

It is one of Nature's wise provisions that most water insects breed and develop at the very time when the fry begin to feed,

[1] *Practical Management of Fisheries*, p. 18.

[2] See account also of trout growth-rate, when fed on water-shrimps at Lord Eldon's, p. 167–8. H. C.-P.

The stomachs of very young trout have been opened, and found to contain quantities of shrimps, snails and larvæ, and also the fry of such coarse fish as may happen to be in the same water.[1]

PONDS.

The construction and maintenance of rearing ponds are matters of careful study, and often require considerable engineering skill in obtaining levels, so as to lose no space and economise labour. It is also to be observed that whilst the quantity of water and its 'reliability' are matters of the first moment, it must also be of the quality and temperature suited to the growth of the best natural food, and of the weed upon which 'the food' lives, and further, that it is not subject to pollution or uncontrollable floods. My own ponds are constructed as close to *springs* as possible, in fact, at the springs themselves, that is to say, either over the springs, or within a few yards of them. Here they are safe from any risk of pollution or floods.

If under the above conditions the quantity and 'unfailingness' of the springs are established, there is scarcely any limit to the number of ponds that may be made, depending on the fall of the land, and the extent of the holding. If, on the contrary, the springs have been known to fail, even in the driest season, I should turn my back on the place, however tempting in other respects.

It is a popular error to suppose that trout will thrive only in streams; they often grow far more quickly in ponds. It is not the current they require, but a constant supply of good water, with *plenty of food.* The majority of streams, however small in their normal condition, are occasionally subject to floods, and cannot, on account of the great body of water then coming down, be effectually fenced.

[1] At the proper season, large numbers of small coarse fish can be procured, including pike, perch, gudgeon, roach, dace, chub, minnows, &c., and these make excellent food for young trout. The writer has frequently hatched the ova of these fish for the express purpose.

A grating fine enough to keep the young fish within bounds chokes up with rubbish in a few minutes, and is carried away bodily or the water is forced into another channel; in either case the fish are liable to pass out of bounds, and they are virtually lost to the original owner. The safest plan to adopt in the construction of ponds is to excavate rather than to dam up; it is very much more expensive, costing as a rule between eight-pence and a shilling per cubic yard; but this is much more than balanced by the security against unsound heads of dammed-up ponds. If the soil is suitable, however, a thoroughly sound 'head' is easily made, the thickness of which must depend on the weight of water behind it; but the head should in no case be less than eight or ten feet through, and it is sometimes necessary to make it as thick as thirty feet. The inside of pond-heads should shelve off towards the centre of the pond at a considerable angle, but as much depends on local circumstances, no hard and fast rule can be laid down. Camp-sheathing, or planking, is necessary in some places, and brick heads may have to be formed where space is limited, and where a perpendicular head is required. If ponds are well made in the first instance, there need be no danger of the head breaking away.

In making ponds, it is most desirable to have the 'outlets' very capacious, so as to take off any extra water in a very wet season. Ponds for business purposes should also be constructed within easy distance of a railway station, and where good fresh water can be obtained on the road and added at the last moment. The cost and risk of removing yearling and older fish are very much lessened in such a case. *Per contra*, very many fish are killed by the addition of unsuitable water on the journey, and except in well known localities, I never allow water to be added after the consignment has been sent off, preferring to send fewer fish in one vessel, or, which amounts to the same thing, a sufficient quantity of water to last out, and keep the fish alive; it is the rarest thing for any of my fish to be lost on the road.

A fish-breeder, who looks for some return for the money laid out on his 'fishery,' must be able to put his hand on any

or all of his fish whenever he wants them, and this can only be done by constructing a number of ponds. These may be round, or square, or any other shape, according to circumstances, and not larger than an acre in extent, otherwise they are difficult to net, and take too much time in running out. I prefer myself ponds of a quarter to half an acre for the yearlings, as the water can be run off in a few hours, the pond fished, and the water shut back in a day. This extent of surface exposed to the sun and air encourages a greater vegetable and insect growth than does a long narrow pond, and it is less easily 'poached.'

An additional security is to have the keeper's house close to the water, and also to place obstructions, such as posts ornamented with tenter-hooks, in the ponds ; poachers cannot afford to run the risk of confiscation or loss of nets more than once.

All ponds, whether for business purposes or for sport, should be capable of being emptied at any time, and the greater number of a pisciculturist's ponds are of necessity drawn down every season in order to supply the demand for fish, and also to make certain that no fish remain in them. A few fish of half a pound amongst the fry will make all the difference in the number of yearlings found, as I know from bitter experience. One season a few yearlings were left behind in a nursery pond, and on the pond being fished the next season, these had nearly quadrupled their size, but at the expense of thousands of fry. Trout are cannibals, and will, unless provided with plenty of insect food, devour one another as long as there is any great difference in their size. This has been observed in the case of a few fish of only eight weeks old, which had been by accident put in a hatching trough amongst some fry of about five weeks old ; a comparative monster was seen with the tails of two younger fario sticking out of his mouth ; he was instantly captured, and when transferred to a basin in order to exhibit his amiable propensity, he disgorged one of his little cousins, half-digested, but the other disappeared down his throat ! This propensity doubtless increases with age.

I hold at the present time, devoted to the different varieties

of Salmonidæ, over forty ponds, about thirty of which are usually set apart for rearing yearling fish and for food-growing.

A number of ponds is necessary, as there are at least five favourite varieties of Salmonidæ, viz. Salmo Fario (English brook trout), S. Fontinalis (American do.), S. Levenensis (Loch Leven do.), S. Ferox (Great Lake do.), and Thymallus Vulgaris (Grayling); and there would be immense trouble in separating them if the different varieties were placed in the same pond. Fontinalis and grayling could be readily distinguished, but it is no slight work with fish so similar in appearance as Fario, Levenensis, and Ferox, when small, to guarantee that they are not mixed; it would be more simple if the fish were not so active, and the water not quite so chilly.

The ponds for the large breeding fish are constructed on a different 'water-shed,' or at all events on different levels from the rearing-ponds, and are so fenced that there is no possibility of the larger fish getting into the nurseries, or the small fish getting out. The area of the ponds for the breeding fish is much larger, and the water deeper. Ponds for sport only may be as large as possible, and the bigger the better, but in all cases they should be capable of being emptied, as there is sometimes the probability of pike or perch getting in, and these might have a real good time of it amongst the trout, before detection. A few very large trout will also do as much damage, amongst smaller fish, as pike, and if the water can be run off they should be removed or destroyed. Pike and perch are occasionally introduced into trout waters through the medium of water-fowl. I have found small perch in one set of my nursery ponds, which *must* have been conveyed by birds, in the ova stage, as there were no perch nearer than five miles, and these were in ponds on another water-shed.

The presence of pike in some of our best trout waters is the curse of the place, and it seems to be impossible to get rid of them, although a price is set on their heads. One reads of hundreds of pike having been killed during the season from some favourite trout-stream; but it seems probable that the

nuisance will continue so long as large ponds at the head or by the side of the river contain them. There is no keeping them back by fences, and frequently no attempt to do so; the effect being, very often, that the best part of the river is occupied by pike, instead of containing a good stock of trout. Netting the ditches by the side of the river at spawning time is a good way of helping to exterminate these depredators.

ON STOCKING.

A pisciculturist is frequently asked which is the best kind of trout to stock a certain piece of water. The question cannot be decided without actual experiment, but a tolerably good inference may be drawn by comparison of the particular water with other in the same neighbourhood.

Yearling fish should be introduced when the stock in the water has become low; it is generally a waste of valuable fish-life to turn 'fry' into a stream or lake which already contains some trout; if there are small tributary streams on the same property leading into the main water, the stock may be replenished year by year with 'fry,' or even ova; but as there would always be considerable loss, *very large numbers* must be introduced, and the tributaries must be well fenced (which is always a difficulty), so as to prevent the little fish from getting out, and any larger fish from getting in; otherwise good results will seldom follow. The largest fish obtainable should be procured; the first expense being perhaps greater, but proving in the end less, and a greater security from cannibalism. Well-fed yearlings should run from four to seven inches in length, some may be even more, and these are to a greater extent capable of 'holding their own' against larger fish than the small-sized yearlings bred in some waters, and are therefore worth much more money.

Salmo Fario (English brook trout) must take the precedence of all the other varieties, as it is the indigenous fish to most

English waters, and is well deserving of best position on account both of its sporting and edible qualities. In the warmer waters of the South it often attains to a great size, and is caught with the fly up to seven and eight pounds weight, still heavier fish being occasionally taken.

S. Fontinalis (American) is a lovely fish. It has only one fault, viz. that of travelling down stream, and on this account it has ceased to be the favourite it used to be in England a few years ago. The fish appears to be best suited to cold ponds in this country; in several places it has become well-established, and is bred from every year. The only thing required is very careful fencing. Fish of this species are not so active or strong as the English fish found in the same water, and not better eating. Another objection I have often heard lately is that they do not rise well at a fly; but this holds good as to the other varieties also when plentifully supplied with alternative food.

S. Levenensis (Loch Leven trout) is undoubtedly a fine fish. When caught in its own beautiful loch there is no better fish either for sport or table; whether it will preserve these characteristics in other waters seems to be a question of food only; it thrives in the South of England in either lake or stream. I have myself a very high opinion of Salmo Levenensis, and rear them in considerable numbers every year, their growth being very rapid in my water. I get my ova, of course, from the Howietoun fishery. In which class S. Levenensis is to be placed, is perhaps for more scientific men to decide; my suspicion is it is merely a local variety of Salmo Fario.

S. Ferox (Great Lake trout) do well in very deep waters, and grow there to a large size; they are usually obtained from the famous fishery at Huningue, or from Herr F. Zenk, Würtzburg, in Germany.

Thymallus Vulgaris (Grayling) are worth greater cultivation in the streams of the South of England, if only on account of their being in season after trout-fishing is over, thus affording a most welcome extension of time to anglers. There is less

difficulty in breeding grayling artificially than was formerly supposed. The principal risk is owing to their spawning operations being got through in such a short time. If the right day is missed, the fish may have finished, and no ova can be obtained. Young grayling can be reared in nursery ponds with as little trouble as trout, and they thrive on exactly the same food.

It remains to give a caution against over-stocking, which, as a practical writer truly observes, will produce 'a sort of permanent famine.' A stream should never be fully up to its possible 'limit in regard to stock, a little under will give you bigger and better fish.' At the same time it is an undoubted fact, that there are very many waters which (if managed properly) would contain with perfect safety ten times the number of fish they now do.

Let me, in conclusion, draw attention to some of the enemies of trout.

In the natural state the parent fish devour the ova as soon as it is deposited. Only to-day I saw a pair of Fontinalis about four pounds each on the spawning beds, and watched them for some minutes. Every time the female deposited a few eggs, both she and her 'consort' turned round and devoured them instantly. Yearlings and older fish lurk in the vicinity of the spawning grounds, and devour every egg they can find. Swans,[1] geese, wild and tame ducks, moor-hens, dab-chicks, cootes, cattle and rats, rout about the spawning beds, and the later spawning fish disturb the 'redds' previously made. Nature is bountiful enough to provide for considerable waste, but this is no reason why art should not step in and reclaim it. It is only in places possessing a *very large extent* of natural spawning and rearing ground that any great number of store fish are to be found. In some of the finest reaches of water one sees but a few dozen yearlings to replenish the river by-and-bye ; the natural consequence of this being, that in two or

[1] A swan will devour the best part of a gallon of trout ova in a day, say, 40,000 eggs.

three years' time, the water contains but a very limited number of fish, or, as the phrase goes, 'is not so good as it used to be.' In many instances it is not possible to *make* either spawning or rearing grounds, and the fishery either becomes valueless, or the proprietor has to re-stock the river by artificial breeding.

Perhaps the most formidable enemy to a trout is the 'upright form' in the shape of man. A much greater tax is levied on the stream in these days on account of the greater number of persons who practise the 'gentle art,' and the water is unreasonably expected to yield more sport, although no measures are taken to increase its breeding or feeding capacity.

Liberal as the proprietor of a trout stream frequently is in granting permission to fish to strangers, it is a great mistake to allow so much freedom in the *number and size* of fish killed. Four or five brace of sizeable fish are ample for a day's sport, and none but a 'pot hunter' would grumble about a necessary and reasonable limitation. A limit should also be imposed as to the size under which fish should be kept—say from eleven to fifteen inches, according to circumstances—and all fish below that length ought to be honestly returned to the water. Years ago the case was different altogether; but now there are a hundred fishermen where formerly there was one. A pheasant breeder may reasonably (if he likes) allow his 'battue' days of a thousand or two thousand birds; but pheasants reach perfection in one season, and only sufficient breeders need be kept for the next. Trout, on the contrary, take four or five years in most waters to attain a killable size, and a too indiscriminate permission to fish, coupled with the absence of any restriction as to the number and size of fish allowed to a rod, are the ruin of many waters.

The protection of fish in all stages is necessary, but there is often great difficulty in 'preserving' the larger specimens. As soon as they are of an age to perpetuate their species, their instinct teaches them to travel up stream to find suitable spawning grounds, when many of them, going out of bounds, never get the chance of coming back again. It is at spawning time

also that poaching is systematically practised, as the fish are to be found in shallower water, when a slight knowledge by the poacher of the habits of trout will enable him to take almost as many fish as he wants. Greater loss occurs at this than at any other season, as not only the parent fish, but all their offspring are destroyed. Spawning grounds should be watched night and day, and good solid obstructions should be so placed in the river as to be effectual in preventing the working of nets.

Hatches, or water-gates, frequently leave no place for fish to hide, and if the poacher knows his business (as most of them do) he has only to shut down the gate, and the pool runs all but dry in a few minutes; the poacher pockets the fish, opens the gate, and takes his departure as quickly and quietly as he can, returning the next night probably to find another good haul of fish. Proprietors of streams, and also their keepers, are not always judicious in their attempts to 'secure' the fish to their own part of the water.

Weeds, instead of being ruthlessly eradicated, as is too frequently the custom, should be *judiciously* retained. With the wholesale destruction of weed goes the principal part of the fishes' food, and often the only hiding places the river affords.

A stream is sometimes cleared of weed so entirely as to resemble a well-kept carriage drive. The trout naturally seek a more secluded part of the water, and will no more remain where there is no *cover*, than would pheasants. If they stay, they become shy feeders, and as soon as one fish is startled by a footstep on the bank, he seems to communicate the alarm to others, as if by electricity, and the whole rush wildly up and down stream, causing mimic waves in the river for a hundred yards or more.

A certain number of fish are thus 'preserved' to the river, as the angler has not the slightest chance of getting within cast of them. The proprietor's wish of course is, that persons who have permission to fish should have fair sport: the fault lies principally with the millers and keepers, who find it easier to set a few men to clear the weeds right out, than to superintend

what is called 'judicious' cutting. Some river keepers think that their sole duty is to walk leisurely up the river once a day to look out for anglers—or for 'tips'?—but as for their preserving the fish in other and more effectual ways, there might as well be no keeper at all! On the other hand, there are keepers to whose knowledge and thoughtfulness the proprietor owes his valuable fishery.

Several such men are known to the writer, and have been 'on the water' all their lives, doing their duty thoroughly and fearlessly, whether the offenders be 'gentlemen' or poachers.

Millers say they cannot get the 'tail' water away from their wheels; and this, when true, is undoubtedly a loss of power to them: but a very little time spent in clearing weeds from certain spots would allow the water to pass, and at the same time retain 'hides' for the fish, and so encourage them to remain. There is such a thing as retaining *too many* weeds and thereby injuring sport to a great extent; but if weeds are left to grow in big patches, and only here and there a clear space cut, the fish are inclined to feed more boldly, being but a few feet away from a good 'holt.' It is the angler's fault or misfortune if he loses fish by allowing them to dive head first into a patch of weed.

The best fish and best sport are always to be had in a fairly weedy part of the stream.

By 'sport,' I do not mean great bags of fifteen or twenty brace, but good honest fights with a brace or two of *three or four pounders*, which have taxed all the angler's powers of patience and skill to bring to bank. The after-dinner stories of a triumph over a 'real big one' afford a true sportsman more pleasure than the bragging of 'a basket full' taken on a day, and under circumstances, when the veriest novice could not fail to catch them if he kept his fly in the water.

THOMAS ANDREWS.

[Some further notes on the breeding and cultivation of 'Coarse Fish,' including the Black Bass of America, by Mr. R. B. Marston and the Marquis of Exeter, will be found in Vol. II.—H. C.-P.]

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